The Clinical Experiences of
Frederick R. Klenner, M.D.

Clinical Guide to the Use of Vitamin C

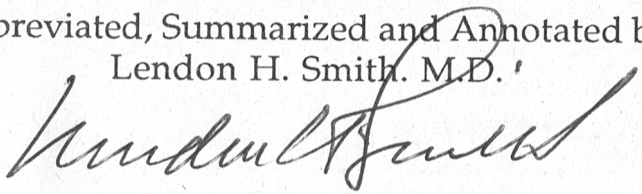
Abbreviated, Summarized and Annotated by
Lendon H. Smith, M.D.

Foreword by Linus Pauling, Ph.D.

The Clinical Experiences of
Frederick R. Klenner, M.D.

Clinical Guide to the Use of Vitamin C

Abbreviated, Summarized and Annotated by
Lendon H. Smith, M.D.



Foreword by Linus Pauling, Ph.D.

© 1988 by Life Sciences Press. All rights reserved. This book is protected by copyright. No part of it may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electric, mechanical, photocopying, recording, or otherwise, without the prior written permission.

Made in the United States of America

First printing: 1988
Vitamin C as a Fundamental Medicine: Abstracts of Dr. Frederick R. Klenner, M.D.'s Published and Unpublished Work
ISBN 0-943685-01-X

Second printing: 1991
ISBN 0-943685-13-3

correspondence address:

Dr. Lendon Smith
2233 S.W. Market Street
Portland, OR 97201

Contents

	page
Preface	I
Foreword	II
Introduction	II
General Remarks	1
How It Works	2
Dosage	6
Tests for C	9
Insidious Virus; encephalitis	9
Virus Pneumonia	15
Poliomyelities	17
Hepatitis	22
Herpes Simplex and Zoster	23
Chicken Pox	24
Measles	25
Mumps	25
Mononucleosis	26
Pancreatitis	26
Rocky Mountain Spotted Fever	27
Trichinosis	28
Tetanus (Lockjaw)	28
Urethritis and Cystitis	30
Alcoholism and Antabuse	30
Arthritis	30
Cancer	31
Leukemia	31
Cholesterol and Atherosclerosis	33
Cavities	34
Disc, ruptured intervertebral	34

contents cont. page

Corneal ulcers 34
Diabetes 34
Glaucoma 35
Pregnancy 35
Schizophrenia 36
Burns 36
Pseudomonas infections 37
Heat Stroke 37
Sunburn 37
Radiation Burns 37
Surgery 37
Toxins and Heavy Metal Poisonings 38
Bites and Their Toxins 39
Snake Bites 41
Puss Caterpiller 42
Mosquito Bites 42
Poison Oak and Ivy 42
Multiple Sclerosis and Myasthenia Gravis 42
Fatigue 43
Multiple Sclerosis Treatment Protocol 45
Complications 54
Safety 54
Reluctance by Orthodox Medicine to Accept 55
Dr. Klenner's Quotes 57
References 58

If Dr. Klenner had lived he would have wanted this book to be dedicated to the following:

Anne Klenner for her patience and understanding.

Fritz for the lively discussions in chemistry.

Mary Anne and Gertrude for being 'guinea pigs'.

Preface

After Frederick Klenner died in 1984, his friend (and mine), Arthur Rybeck, a nutritionally oriented dentist practicing in Wheeling, West Virginia, asked if I would be interested in going over the 27 papers Klenner had written from the early 1940's to the early 1970's. The whole idea would be to let the world know how thoughtful and careful a researcher he was, and to encourage others to continue his work. If a compendium of Vitamin C (and other nutritional) therapy could be compiled from the published work of Dr. Klenner, maybe we could get more traditional medicine-oriented doctors to use his methods for the relief of sickness and suffering.

Standard doctors tend to believe studies and reports if published, but tend to disbelieve hearsay stories about treatments that patients have read in a "health" newsletter.

I have used Dr. Klenner's methods on hundreds of patients. He is right. It helps almost every condition and situation, and my failures were due to inadequate amounts.

The timing of such a paper might be most appropriate. Doctors are suffering from low public esteem because they are perceived to be money-grubbing and mistake-laden. This would be a scientifically documented—from the medical literature—therapy for a variety of conditions: cardiovascular, allergies, infections, malabsorption, (see index), and even A.I.D.S., for which prescription drugs may be hazardous. Now the doctors can say, "We have a safe, reasonably natural way of treating your condition that is fairly cheap. We might just keep you out of the hospital."

That last part might make the insurance carriers perk up their ears. The patients might dash back to the doctors' offices because the word is getting out that doctors are helping people without side effects. Notice also, the dates on these articles and references—these things were known decades ago.

Take this booklet to your M.D. and suggest that he read about these documented studies. Take Dr. E. Cheraskin's "*Vitamin C Connection*" along for further documentation. If your doctor doesn't know, how can he help you?

Foreword

The early papers by Dr. Fred R. Klenner provide much information about the use of large doses of Vitamin C in preventing and treating many diseases. These papers are still important. Dr. Lendon Smith has done a valuable service in making the work of Dr. Klenner available to the public.

Linus Pauling, Ph.D.

Introduction

I have before me the published words of Frederick Robert Klenner, B.S., M.S., M.D., F.C.C.P., F.A.A.F.P. He graduated form Duke University, School of Medicine back in 1936. After three years of hospital training he entered the private practice of medicine in Reidsville, North Carolina. His main sub-specialty was diseases of the check, but he became interested in the use of massive doses of Vitamin C in the treatment of virus diseases and other illnesses as well. He inspired Linus Pauling and Irwin Stone to expand the research on the great benefits of Vitamin C. Dr. Klenner died in 1984.

What follows is a review, and abbreviation, a summary and a critique of the 27 scientific papers he wrote. In the light of the recent developments and research in the use of Vitamin C, it is essential that the roots of its usage be reviewed. Briefly, Vitamin C does attenuate most virus infections by aiding the production of interferon, controls many cancers, relieves some depression, modifies much pain and changes the course of many diseases, like multiple sclerosis, amyotrophic lateral sclerosis, spider bites, the bites of poisonous insects and reptiles. The watchword is, "If in doubt, give Vitamin C."

General Remarks

He believed in the healing power of nature, but believed that natural remedies could enhance that power and were safer and usually more effective than drugs. Hippocrates said, "Of several remedies the physician should choose the least sensational". Vitamin C fills that criterion.

In 1948, he published his first paper on the use of large doses of Vitamin C in the treatment of virus diseases. In 1960, he realized, "Every head cold must be considered as a probable source of brain pathology." Hold on to this thought; it is significant for the understanding of diseases like multiple sclerosis. He also felt—as do Archie Kelikarinos and Glen Dettman of Australia—that the dreaded Sudden Infant Death Syndrome was basically a Vitamin C deficiency. His maxim: the patient should get "large dosed of vitamin C in all pathological conditions while the physician ponders the diagnosis."

We have mislead ourselves with the mistaken notion that all C was supposed to do was keep us from scurvy. If, however, we base our needs on the amounts other mammals manufacture with their intact enzyme it comes to 2-4 grams daily in the unstressed condition. Under stress 70 kg of rats make 15 grams of C.[Burns; Salomon; Conney]

We are willing to accept the premise that some of us are born with genetic defects that lead to problems that can be somewhat controlled with diet and supplements (i.e. phenylketonuria, galactosemia, and alkaptonuria and pernicious anemia). Can't we accept the fact that we all have a genetic deficiency of the enzyme, 1-gulonolactone oxidase and have to take Vitamin C for health, even for life? [Burns,1959]

Irwin Stone calls this human genetic lack, this inability, hypoascorbemia. The point that Dr. Klenner is making: "The physiological requirements in man are no different from other mammals capable of carrying out this syntheses." If one is anemic due to poor iron intake, is it cheating to swallow iron tablets for a while? If you are hypoascorbemic because you cannot manufacture Vitamin C from sugar, extra glucose in your diet will not help, you need to take Vitamin C.

He reports that one of the pilgrim fathers wrote to a friend in England in 1621: "Bring juice of lemon, and take it fasting. It is of good use."

Folklore has revealed to us what natural remedies have been helpful and even curative. We have been lured into the trap of

modern medicine which prescribed a drug for every condition. But consider acerola: Puerto Rican legend has it that if the tree bearing this fruit is in one's backyard, colds will not enter the front door. This fruit bears 30 times the amount of C than oranges. Dr. Klenner credits Boneset with the health of the Klenner family during the great influenza pandemic of 1918. This plant was made into a tea, bitter but curative. He assayed the tea for Vitamin C; they were getting 10-30 grams at a time!

The small amount of Vitamin C, recommended by the R.D.A. (75 mg then and 60 mg now) is enough to protect the person from gross disease, but not the amount to maintain good health. Dr. Klenner quotes Kline and Eheart, who in 1944 realized there are wide variations in the need for Vitamin C, in otherwise "normal" individuals. In 1945 Jolliffe suggested that the optimum requirements might be more than 10 times the small doses recommended.

Scurvy develops slowly. Crandon (in 1940) found that the Vitamin C level of the blood plasma fell to zero for 90 days before there was obvious clinical evidence and that this was as long as 132 days before the first signs appeared.

How It Works

How does it work: as an oxidizing agent—massive amounts, i.e., 50-150 grams, intravenously, for certain pathological conditions, if allowed to run in rapidly (20 gauge needle), acts as a "Flash Oxidizer" and may correct the condition in minutes. It can be a reducing agent. It neutralized toxins, viruses and histamine. The more serious the condition, the more C is required.

It appears that Vitamin C acts as a reducing agent, an oxidizing agent, an anti-clotting agent, an antihistamine, and as a anti-infective agent.

He summarized the function of C in poliomyelitis:

(1) Virus destruction.

(2) Dehydrates the brain and the spinal cord safely.

(3) Supports and normalized the stressed adrenal glands.

(4) It preserves the lining of the central canal and maintains more regular spacing and less crowding of ependymal cells (surface cells of the spinal cord).

Ascorbic acid enters all cells. It "proceeds to take up the protein coats being manufactured by the virus nucleic acid, thus pre-

venting the assembly of new virus units." Cells expand, rupture and die, but there is no virus particles available to enter and infect new cells. If a virus has invaded a cell, the Vitamin C contributes to its breakdown to adenosine deaminase which converts adenosine to inosine. Purines are formed which are catabolized (broken down) and cannot be used to make more virus nucleic acid.

Viral nucleic acid has a protein coat which protects this parasite as it rides the blood or lymph highway to gain specific cell entry.[Larson] It is possible that if the ascorbic acid can remove that protective protein coat in the blood stream or in the cells, the white cell phagocytes and immune globulin could then neutralize these vulnerable virus particles.

I like this from Dr. Klenner: "Ascorbic acid also joins with the available virus protein, making a new macromolecule which acts as the repressor factor." (interferon?) Multiplication of new virus bodies is inhibited.

He summarizes the study of Lojkin, (1937), who discovered the inactivation of one virus was due to a specific intermediate product formed in the course of the oxidation of C but needed the stimulation of copper ions. It is a peroxide and is decomposed as rapidly as it is formed. This study indicates why Vitamin C works better in the body and not the test tube. Every function of the body requires enzymes, some vitamins and some minerals to act as coenzymes. If enough Vitamin C is supplied, the enzyme system that breaks down invading viruses and bacteria, will be able to do its job properly. Quote: "Unless the white blood cells are saturated with ascorbic acid, they are like soldiers without bullets."

Vitamin C *in vitro* at body temperature inactivates certain toxins at an unbelievable rate. Back in 1938 some researchers [Klegler] placed Vitamin C in test tubes with toxins. After incubation for 48 hours the toxins were not lethal to mice when injected. The more toxin in the tube, the faster the C disappear. "The rate of disappearance of the C in toxin and ordinary broth was more striking the greater the concentration of Vitamin C." Dr. Klenner concluded: "The degree of neutralization in a virus infection will be in proportion to the concentration of the vitamin and the length of time which it is employed."

This has been Dr. Klenner's main complaint: failure to benefit from Vitamin C use is usually due to inadequate amounts being used for too short a period of time.

Vitamin C combines directly with the toxin/virus. This new compound is oxidized by vitamin C; the toxin/virus and the Vitamin C are destroyed. This must be why C has to be continued after the apparent cure.

It acts as a respiratory catalyst, aiding cellular respiration by acting as a hydrogen transport. The liver has a better chance of detoxifying the blood stream of poisons, toxins, viruses and bacteria if the plasma is saturated with Vitamin C. Fever, toxins and bacteria reduce the level of C. Therefore, Dr. Klenner theorizes, if a high level of C is maintained, all tissues return to normal despite the fever and the bacteria; and because of its action "as a respiratory catalyst, it enables the body to build up adequate resistance to the invader."

The anaerobic condition in the tissue is relieved. Acidity is decreased and large amounts of adrenalin disappear. The constriction of the blood vessels ceases and the liver and pancreas can receive the proper nutrients to function. Properly calculated doses of C on a continuing basis will restore the normal physiology of the body.

The adrenals and Vitamin C are interrelated. During an infection Vitamin C is absent from the urine and is decreased or absent in blood, even when moderate amounts are being given intravenously. Vitamin C in the adrenal glands was greatly reduced in animals succumbing to polio. (Dr. Klenner cites the literature of 1934 - 35 to document this.) Hans Selye knew how the adrenals would show damage with stress. He found that all patients ill with a virus would show petechial hemorrhages (small leaks of blood into the skin) when a tourniquet was applied to increase venous back pressure. Capillary weakness is a sign of low levels of Vitamin C. Sugar in the urine, associated with the petechiae, disappeared when adequate serum levels of Vitamin C were obtained.

It is known the C regulates the intercellular substance of the capillary wall. The collagen of all fibrous tissue structures is dependent on an adequate level of Vitamin C. Increased capillary fragility is observed in individuals when the blood level of C drops to 1 mg per liter. These weak capillary walls may allow a simple virus to invade the brain (see "Insidious Virus").

In addition, Vitamin C acts as catalyst in the assimilation of iron.

(Ascorbic acid is a necessary coenzyme in the metabolic oxidation of tyrosine. The latter is necessary to break down protein to a usable amino acid.)

Dr. Klenner states, "The importance of Vitamin C as an antibiotic and as the precursor of antibody formation lack scientific appreciation because of its simplicity." The reluctance of the medical profession to employ it in massive doses like antibiotics has allowed the appearance of allergies as a major problem.

Vitamin C is known to be essential for life. He quotes the studies that show that when Vitamin C is given intravenously to patients with a deficiency, fibroblasts begin to form connective tissue and capillary buds invade blood clots within just a few hours. In a similar time frame when used as an antibiotic, fever falls and the white count climbs.

Dr. Klenner points out that the standard treatment of colds was based on the alkalinizing effect of forcing juices down the patient's throat. Highly alkaline urine has less Vitamin C. The Vitamin C would be thus retained in the tissues helping to guard against the viruses and bacteria. When Vitamin C levels drop, glycogen in the liver is converted to glucose: a response to stress.

Dr. Klenner is convinced that C will work in any problem but the negative results reported are only because an insufficient amount was used. A tragic error in judgment has been made by the National Academy of Science and the National Research Council: the minimum daily requirement for C. All of us need more; some need a lot more.

Factors that determine need:

1) age, 2) habits, alcohol, drugs, tobacco, 3) sleep, especially if drugged, 4) trauma of infection, of physical injury, of work, of emotions, of surgery, 5) Kidney threshold, 6) environment, 7) physiological stress, 8) climate changes, 9) loss of C in stools, 10) absorption, 11) binders in tablets, 12) individual difference in body chemistry, 13) drugs, pesticides, carbon monoxide exposure, 14) weight, 15) poor storage.

Klenner quotes the *Food and Life Year Book*, 1939, published by the U.S. Department of Agriculture (surely as conservative and orthodox a group as one could ever find): "Even when there is not a single outward symptom of trouble, a person may be in a state of Vitamin C deficiency more dangerous than scurvy itself. When such a condition is not detected, and continues uncorrected, the teeth and bones will be damaged, and what may be even more serious, the blood stream is weakened to the point where it can no longer resist or fight infections not so easily cured as scurvy. Five grains of aspirin will not relieve kidney colic; don't expect control of a virus with 100 to 400 mg of C."

Dosage

The amount of C depends upon the severity of the disease but also upon the efficiency of the victim's immune system. The usual dose of 65 mg per kilogram of body weight may be expected to take care of the usual virus infection when given every 2-4 hours by needle. The more severe condition would respond to larger single injections.

However "if the activity of the pathogen is completely stopped, the development of active immunity will be interrupted." Therefore, modification of childhood diseases is the aim of Vitamin C treatment, not the complete overnight suppression that would prevent the body from making immune memory. To accomplish modification, 250 mg per kilogram should be given intramuscularly. If necessary, half of this amount would be given in eight hours. Procaine 1.5-2% can be given with a separate syringe with the same needle just prior to the C.

The itch, the irritability, the pain, the vomiting of chicken pox measles and mumps was assuaged in one hour with this last dose. Crusting of chicken pox was present in 5 hours instead of 7-9 days. 250 mg per kilogram eliminated the disease in contrast to the 65 mg which just suppressed it. 350 mg per kilogram may be employed along with antibiotics in treating stubborn bacterial infections. Because a virus infection will deplete the Vitamin C reserve, bleeding from the nose or chest would indicate an emergency situation; Vitamin C, using the above noted dosage schedule, should be pumped in immediately.

He cites experimental work by others indicating that in monkeys smaller doses of C could stop the disease from appearing during the incubation period compared to the relatively large doses needed to suppress the disease once the disease was diagnosed. It all suggests that most of us will not get *any* serious virus disease if we would all take sufficient Vitamin C daily. We need, however, to get a little sick so we will develop some immunity, but if we get *very* sick a lot there is something missing, usually Vitamin C. He is suggesting that the more serious the disease, the more Vitamin C should be used to treat it. (We titrate the sickness, as Dr. Cathcart says: "Well, you've got a 200 gram flu or a 50 gram cold.)

In Dr. Klenner's review of his over 3000 cases about 15% required more Vitamin C than the average. This ties in with the idea that we are all different. It also explains why some dogs, who make their own Vitamin C would die of distemper. "I have

cured many dogs suffering with distemper by giving several grams of ascorbic acid, by needle, every two hours." 15% of 300 obstetrical cases required 15 grams of C daily to remain within normal limits. The other 85% needed only 10 grams per day. He felt some spillage into the urine indicated the body was saturated. "White blood cells are useless unless they are full of ascorbic acid."

Dr.Klenner argues that the recommended daily allowances are only to prevent scurvy. "Acute scurvy and chronic hypovitaminosis are metabolically different conditions." We all are much more vulnerable to stress, infections, and pollution.

A shortage is produced from a poor diet but also poor hygiene, overcrowding, dampness, cold and physical work (or play). There is a narrow margin between health and pathological changes.

For a very severe illness, the dose he used was large and the most effective route was intravenous, but the intramuscular route was satisfactory. He gave at least 350 mg per kilogram of body weight. (A 70 kg man is 150 pounds. thus 70 x 350 = 24,500 mg. He would use a 25 gram dose for a 25 gram illness.) This amount was put in 500 cc of sterile water, usually with dextrose, saline or Ringer's solution. It was diluted so that there was at least 18 cc of diluent to each gram of C. In small children, 2 or 3 grams can be given intramuscularly once every two hours. An ice cap to the buttocks will prevent soreness and induration. As much as 12 grams can be given in this manner into 2 or 3 different muscle sites with a 50 cc syringe; larger amounts must be diluted with dextrose or saline and run in by I.V. drip. If big concentrated doses are given by push (25 grams in a 100 cc syringe), the brain may become dehydrated causing convulsive movements of the legs. Intramuscular injections are always 500 mg to 1 cc solution. At least one gram of calcium gluconate must be added to the fluids each day. Massive doses of C pull calcium ions from platelets; and the clotting mechanism is weakened. Nose bleeds may occur. One gram of calcium gluconate is added to control acidity and to replace the calcium ion loss.

Sodium ascorbate is less painful. Some of us will put procaine, 2%, with the Vitamin C When injected into the muscle. Vitamin C can also be taken orally once the patient is recovering.

This dose is repeated every hour for 6 to 12 times and then every 2-4 hours until recovery.

If using under 400 mg per kg body weight, it can be given with the sodium salt. Doses over 400 mg per kg of body weight must be diluted to at least one gram to 18 cc of solution.

He suggests the following for each bottle: 60 grams of C, 500 mg thiamin HCL, 300 mg pyridoxine, 400 mg calcium pantothenate, 100 mg riboflavin, 300 mg niacinamide. It is to be given once or twice daily.

He used a 23 gauge needle intravenously and a 22 gauge needle for intramuscular use—one inch long for children and one and a half inch for adults.

The idea of these big doses is to saturate the tissues; the white blood cells will be able to destroy pathogens "I have seen diphtheria, hemolytic streptococcus infections clear within hours following an injection of ascorbic acid in a dose ranging from 500-700 mg per kilogram of body weight given intravenously as fast as the patient's cardiovascular system will allow."

He got to know the vulnerability of viruses so well, he played games with them. "When proper amounts are used it will destroy all virus organisms." He could give one gram of ascorbic acid every four hours and modify the disease symptoms, but if he gave one gram every two hours by mouth for four days, he had stopped the disease, apparently by killing the virus. If he gave this dose for only two days, the symptoms returned. (He kept measles simmering in his own children for a month by giving this dose for two days, then off for two then on, etc.)

With 350 mg per kilogram of body weight every two hours, he could stop measles and dry up chicken pox. If he could get in the vein, 400 mg per kilogram two to three times in 24 hours was all that was required (he published this way back in 1951, in the *Southern Medical Surgical Journal*).

He used protamide and it seemed to shorten the course of the course of the disease (it is a colloidal solution of denatured proteolytic enzyme). It was especially valuable in herpes simplex and herpes zoster. Dr. Klenner felt that Vitamin C is related to this enzyme, as it possesses the same anti-neuritic properties. If used together, the results are more dramatic than either one used alone. (The C was used as usual and the protamide was limited to one ampule per day.) Influenza and poliomyelitis also responded rapidly to this dual approach. He found calcium made a big difference as it duplicated the results of the C. He used 10 cc of calcium gluconate (one gram of calcium) along with the C daily. It can also be injected deep into the gluteus muscle.

Tests for C

He noted a monitoring method: "In all virus infections the Benedict urine reaction for sugar will run from two to four plus. *After Vitamin C, this reaction will clear in 18 to 36 hours.* "We all know that Vitamin C is related to glucose and Vitamin C in the urine will show a reducing reaction, just as glucose does. "If a healthy individual is given one or two grams of C by injection, the urine will show a positive Benedict sugar reaction for hours." This paradox, Dr. Klenner explains, indicates that Vitamin C and the virus bodies do form a new compound, and not a reducing chemical, otherwise with all this vitamin C injected, there would be an increase in the response to the Benedict test.

When the urine starts to show a positive test to Benedict's test, it is a sign that the virus is under control and the person is close to normal again. The Benedict's urine test is a guide to treatment with C.

More than 30 years ago, Dr. Klenner developed the silver nitrate urine test. When treating severe pathological conditions, the test done every four hours will reveal the level of Vitamin C saturation. If the urine test is positive for Vitamin C, it means the tissues are saturated and the patient is on the right dose. It is not a waste; some spillage indicates saturation.

Insidious Virus

In June, 1957, he wrote in the *Tri-State Medical Journal*, on the 'Insidious' virus. He recalled a 19 month baby, who had a minor cold for two weeks. Then suddenly, instead of getting well, he developed a high fever and seizures of his right arm and leg. He was stiff, undernourished, cold to the touch and semi-comatose. Two grams of C were injected on admission to the hospital and another gram within the hour. Then it was one gram orally every four hours. Mustard plasters and croup tent were provided. A cup of orange juice was drunk from a bottle two hours after the first shot. The baby began to respond to pain. Temperature was still high, 103.8°. The arm and leg were completely paralyzed, but in eight hours, he began moving the right leg and could hold the juice bottle with both hands. Penicillin "was given on the second and third days to discourage secondary invaders". He was home on the 5th day.

Dr. Klenner recalls six additional similar cases, all under four years of age. Four of the children were seen by a physician who noted no fever and was "not impressed with the illness of the child". All of these children died within 30 minutes to two hours after that physician's examination. No treatment was begun because there was no diagnosis. A virus infection was found at the autopsy. "An insidious virus involvement of the brain."

He takes us through the examination and treatment of a near miss. An eighteen month old girl had a cold for a week; then choked on supper. Her temperature was normal, but she was very restless and whining. On a hunch, Dr. Klenner sent her to the hospital. She was comatose on arrival, responding only to pain. Temperature still normal, but pulse was 152 and respirations 32 per minute. He felt she had the "Insidious Virus" and started Vitamin C. Two and one half grams initially intramuscularly; in 30 minutes she got another two grams. Then every two hours for five doses and then every four hours. After 36 hours, it was injected every six hours. (30 grams altogether). Croup tent and penicillin were used.

Shortly after admission, some water by mouth was tried and she immediately choked, and the water came out of her nose—like bulbar polio. The normal temperature at admission slowly rose to 102.4°. Six hours after admission, she was able to swallow. By the 11th hour the temperature was normal and she was alert and swallowing. In 24 hours from the first dose of C she was drinking freely from a bottle. She went home on the fifth day.

Dr. Klenner feels if she had been put to bed after supper that night, she would have died in her sleep, like a case of Sudden Infant Death Syndrome. He calls it brain pathology caused by an insidious virus.

Dr. Klenner was reminded of the case of a 15 year old girl who had had a lingering cold for several weeks. She complained of extreme fatigue at a dance party, but other than that and her cold symptoms, she went to bed apparently well. The next morning she was found dead. The autopsy was virus pneumonia. Dr Klenner believed that the lung pathology was not enough to kill her, it was the insidious virus that invaded her brain. He feels that the motor nuclei have the shortest nerves, therefore the virus would reach them first. It could lead to spasm of the diaphragm muscle and cessation of breathing.

He felt that ascorbic acid could not reverse the virus once the pathology had progressed to a certain unknown point. He feels

this maxim should guide all treating doctors: large doses of Vitamin C should be given in all pathological states, "It should be given by all physicians while they wait the diagnosis."

These large doses should be reduced once the temperature approaches normal; false temperature rise may result. If the C is taken from the ampoules and swallowed in some juice, it will have about the same results as if it had been injected.

In another similar paper published the next year, 1958, in the *Tri-State Medical Journal*, he outlines two important stages:

Stage (A) - 1) a history of having had the flu for two or three days complicated by physical or mental stress or 2) a mild cold with a runny nose for several weeks. Then the sudden onset of Stage (B) with either 1) convulsions, 2) extreme excitability or dancing eyeballs, 3) severe chill, 4) strangling during normal swallowing, 5) Collapse or stupor.

Stage (B) is usually associated with the following: 1) rapid pulse, 2) normal or moderately elevated temperature, 3) respirations twice the normal rate and sometimes an air hunger (which is reminiscent of that seen in acidosis or aspirin poisoning), 4) dilated, unequal pupils, 5) normal urinalysis, 6) elevated white blood count (which elevation is usually associated with a bacterial infection), 7) normal bowel action, 8) loss of bladder control when con-vulsions or coma occurred.

He felt that the rapid spread of the virus to the brain tissue was similar to the speed of the onset of the symptoms after a sever head injury. "... a margin of safety is so narrow that life and death are separated *only* by minutes." There is no time to wait for the laboratory results.

Case I: A 64 year old woman had a slight cold for a week, but no other symptoms. She suddenly developed 104° (axillary) and slipped into a coma (pulse 120). In the hospital she received achromycin and ascorbic acid. Dr. Klenner put 26 grams of C into 375 cc of 5% dextrose in water, and let it drip intravenously, 75 drops per minute. An oxygen mask was applied. The white blood count was 18,000.

She became conscious an hour after this was begun but could not swallow and was incontinent. The fever dropped to 102°, but by the ninth hour it was again at 104°. Another I.V. was given (the same as above) with the antibiotic, and the 26 grams of C was begun—R=36 per minute.

In another hour (24 hours after admission) her temperature was 100°, pulse 84, and respiration 28. By noon the next day (36

hours) she was suddenly able to swallow again. She continued the achromycin daily and four grams of Vitamin C orally every four hours.

Case II: A five year old boy with no special symptoms suddenly developed a convulsion and 104° (rectally), pulse 130 and respiration 18. He was extremely restless. His throat was red and white count 9,000. He had another convulsion in Dr. Klenner's office. Dr. Klenner gave him four grams of C intravenously and sent him into the hospital where he got three grams of C intramuscularly. His dose was then four grams of C in orange juice every four hours, plus an antibiotic (chloromycetin, rarely used now). Temperature was normal in 12 hours. He continued treatment at home for three days.

Case III: A 16 month old boy who had had a mild cold for two weeks suddenly collapsed into unconsciousness. The pulse was over 200, and respiration 40 per minute and temperature 100° rectally. Oxygen was started and two grams of C was given intramuscularly. He roused in ten minutes. Two grams of C was given every two hours for five times, then every four hours for twelve more doses. The examination and white blood count (10,000) indicated bilateral pneumonitis so achromycin was added (50 mg every four hours). The temperature was normal by the third day. And he was home in a week.

Case IV: A two and a half year old boy had a lingering cold for ten days. Temperature was 101° with red swollen tonsils. Ears and chest clear, but the pulse was 130 and respirations were rapid and labored. He was sent home to have some prescriptions filled but had a convulsion at the pharmacy and was brought back. Temperature then was 103°. He received three grams of C intramuscularly plus oxygen. At the hospital he was given another two grams of C. It was repeated in one hour and then every two hours x 4. Penicillin was administered along with terramycin. His temperature was normal in eight hours after admission and remained so; he was taking and retaining fluids. He was home on the second hospital day.

Case V: Demonstrates the usual quick response to therapy, but also the recurrence rate if the C is discontinued prematurely. The patient, a 73 year old male, was admitted three times in 24 days with the same disease. He had a slight cold for a few days. Then abruptly, a severe headache was followed by a chill and coma. T=103, p=138, resp.=36, BP=150/90, white blood count was 10,000. Moisture was detected in his lungs. Muscle jerks appeared. Nasal

oxygen begun. Intravenously achromycin and Vitamin C were begun; 20 grams of C was added to 378 cc of 5% dextrose in water. It was repeated in eight hours. He became conscious in 18 hours. He went home on the third day but returned in two weeks with the same findings and received the same treatment and sent home. In seven days he was back with the same symptoms. He was given 24 grams of C and sent home on achromycin and ten grams of C daily indefinitely.

As these cases show Dr. Klenner was confident that the C would handle the virus, but he needed the antibiotics to control the bacterial secondary invaders.

The initial dose administered by needle is no less than 250 mg per kilogram of body weight. For children the dose would be two to three grams intramuscularly using a concentration of 500 mg per cc. Ice on the muscle after injection will usually control pain. "Massive use of C is compatible with any other drug and in most instances it will enhance the value of these other remedies."

He felt that the virus (or their toxins) act on the brain and can culminate in diaphragmatic spasm with resultant dyspnea and even asphyxia.

He believed that the lingering "cold" had depleted the stores of Vitamin C. The capillary beds in lungs and brain are damaged and the virus can invade these tissues. The microscopic pathology in the brain shows thrombosis of vessels, hemorrhages and proliferation of leucocytes. These are signs of ascorbic acid deficiency. If the patients are not given massive doses of C at this critical time, they will experience permanent nerve injury or may succumb. Pregnant women are thus more susceptible to polio because of their relatively low stores of C. "With the use of massive doses of Vitamin C, I have yet to see a patient not fully recovered." It will also shorten the illness by at least one-half the usual sickness days, and the patients can be easily handled at home. Indeed, he treated many of these patients with two and three visits a day in the office for the Vitamin C shots. He did not exclude the use of antibiotics.

In 1960 he reemphasized the need for families and physicians to be vigilant for the potentially fatal viral encephalitis. As published in *The Tri-State Medical Journal*, February, 1960, he warned that "every cold must be considered as a probable source of brain pathology." Most doctors are not impressed with the seriousness of the runny nose, the sore wind pipe and the dry cough until this smoldering virus bursts through the defenses and attacks the brain.

The point he is emphasizing is that the smoldering virus is depleting the circulating Vitamin C, and when it gets low enough, the intercellular cement is weakened; the virus can easily burst through to the susceptible brain. It is like a metastases of the pulmonary pathology to the brain (just like cancer cells seeding into the brain).

The brain is the logical target of any virus floating about in the blood as the vascular system supplying the brain is the most extensive of all the capillary beds in the body. Interference with the blood supply of the nervous system can be disastrous, since the brain cannot accumulate an oxygen debt.

Biochemical techniques will some day indicate what is happening at the cellular level. The proof lies in the results. Dr. Klenner recites some classics way back in 1953. A patient with virus pneumonia and a fever of 106° received 140 grams of C over a period of 72 hours. On the third day she was alert, sitting in bed and swallowing fluids by mouth. Dr. Klenner believed that a similar respiratory virus in a baby with a truncated immune system might spread all over the body in minutes winding up in the brain as encephalitis, pneumonia and diaphragmatic spasm. (The Sudden Infant Death Syndrome (S.I.D.S.) that takes 8,000 babies in the U.S. between ages two and ten months of age.)

It is not just the lung pathology that takes these people; it is the brain invasion. (It sounds a little like Reye's syndrome—an innocent flu turns into a fatal encephalitis.) "It is necessary for everyone to take adequate supplemental Vitamin C to guard against such disasters."

He had searched the literature and found studies reported in 1905 and 1907 that confirmed the virus lung to brain encephalitis pattern. All of Dr. Klenner's patients recovered. How do we get doctors to inject massive doses of C into their collapsed patients while they are "pondering the diagnosis?"

He felt there were many pathways into the brain: nose, stomach, ears but the basic fault might be the breakdown of the intercellular cement of the capillary wall in regulating the permeability of the blood vessels of the C.N.S. Vitamin C is essential to the integrity of those capillary walls. It makes sense to believe that the chronicity of the virus infection—mild though it may have been—could have finally depleted the body of an optimum supply of C for maintenance of tissue repair. Capillaries break down, blood and viruses are free to attack the brain. The theory and practice seem to fit. Vitamin C helps control virus

infections, and if there is a failure, usually it is because not enough C was being used.

In another case, a seven year old boy was treated for influenza off and on for six weeks. He got sulfa, a form of penicillin and five to ten grams of C orally. When he had the fourth recurrence, the antibiotics and C had no effect. On the third day he suddenly became lethargic and then dropped into a stupor. Temperature was 102.6° Dr. Klenner quickly injected him with six grams of ascorbic acid intravenously. In five minutes he was awake, asking, "what happened?" Another six grams in four hours and two more at six hour intervals. Recovery complete in 24 hours without a trace of recurrence. The patient was administered five grams of C in juice every eight hours for a week. The patient was Dr. Klenner's son.

Viral encephalitis can be associated with cold sores; one third of patients die and 85% of survivors have brain damage. All of us are infected by the age of five years but only 1% experience symptoms. The virus is harbored in a dormant form until a physical or emotional hurt provokes the virus to reproduce and manifest itself with the canker sore.

Virus Pneumonia

He wrote an article about virus pneumonia (*Southern Medicine and Surgery*, Feb. 1948), a persistent debilitating illness that responds poorly to antibiotics. In his series of 42 cases he achieved excellent results with, surprisingly, Vitamin C. Some doctors were using X-rays as therapy!

His routine: 1000 mg of Vitamin C intravenously every six to twelve hours for a mild case. In children, 500 mg of C intramuscularly every six to twelve hours was about right. Three to seven injections were all that was required for complete clinical and X-ray resolution. Most patients felt better in just one hour and definite improvement after two hours. Nausea and headache disappeared after the first shot. Fever fell at least two degrees Fahrenheit in several hours after the first injection.

He gave alkaline drinks as this impedes the excretion of the C through the kidneys. Mustard plasters were used to relieve chest pain and constricted breathing. In some patients cyanosis (blueness due to lack of oxygen in tissues) was immediately relieved by an additional injection of 500 mg of C.

He then reports the case of virus pneumonia which he treated in the early 1940's. The man became blue but refused to be hospitalized; Dr. Klenner wanted to test the catalytic action of Vitamin C to serve as a gas transport (O_2) aiding cellular respiration. He gave him two grams of Vitamin C intramuscularly and the cyanosis began to clear up in 30 minutes. Six hours later that patient was sitting up eating dinner; his fever had fallen three degrees. Dr. Klenner suspected that the C had done more than act as a respiratory catalyst. He was given a gram every six hours for three days. He was well by this time. Here is "evidence to prove unequivocally that Vitamin C is the antibiotic of choice in the handling of all types of virus diseases. Furthermore, it is a major adjuvant in the treatment of all other infectious diseases."

Virus Pneumonia: female, 28 years, temperature = 106°, chest and head cold two weeks, severe headache, stuporous, dehydration. Antibiotics were of no help.

Treatment: 1000 cc of 5% dextrose in a saline solution and four grams of C. Temperature to 100° in eleven hours. Then every two to three hours—two to four grams of C was given intravenously. At 72 hours the patient was alert, sitting up and swallowing fluids. Vitamin C treatment was maintained for another two weeks: two grams every twelve hours. Thiamin was given for deafness (due to previous antibiotics and encephalitis); hearing normal in ten days. X-ray did not clear up for another two to three months.

In a 58 year old man with a severe viral pneumonia only one half the recommended dose was used (two grams every four hours). He slowly improved (three grams in six hours). His dose should have been four grams every four hours or two grams in two hours. "The course emphasized the necessity of administering massive doses of C at frequent regular intervals so as to maintain the proper level of this 'antibiotic' in the tissues."

Dr. Klenner points out, as all doctors know, a secondary infection frequently gets in "on top" of the original virus infection. Virus pneumonia very commonly allows a germ to produce a bronchitis requiring an antibiotic.

Poliomyelitis

In polio Vitamin C destroys the virus, acts as a diuretic removing the edema of the brain and prevents crowding of the cells lining the nervous system (see p. 2). The swollen infected tissue creates a pressure in the unyielding bony vault and cuts off the blood supply to the motor cells, thus paralysis follows.

Dr. Klenner reports the findings of a Dr. McCormick who attended 50 cases of polio in Toronto, Canada (1949). The polio victims who were white bread eaters, developed paralysis, but the brown bread eaters were protected from paralysis. B vitamins seem to give anti-paralysis protection. The Vitamin C relieves the pressure on the vessels so the nutrient—including B1—can nourish the cells properly.

He reports the case of a five year old girl with paralysis of both legs accompanied by knee and back pain. Massage was given along with Vitamin C by injection. Within four days she was able to move both legs. She was sent home to continue the Vitamin C orally at 1000 mg every two hours. She walked by the eleventh day; the vitamin was stopped and B1 begun, only ten milligrams four times each day. She was completely well by the 19th day after treatment had been started.

Another polio case with 104.4° temperature (measured in the armpit) severe headache, red eyes, vomiting and tightness in the hamstrings. Two grams of Vitamin C was given intravenously immediately and again in two hours; then every four hours for 48 hours. In six hours after the first intravenous dose, his temperature had fallen to 100°, his eyes cleared up, he was jovial, sitting and drinking fluids. He would have them on 1500 mg of C by mouth every two hours for a week. The C was discontinued, and he took 25 mg of B1 four times a day. Dr. Klenner felt B1 should be continued for a period of at least three months because nerve tissue is slow to recover.

In another article about viruses in 1949 (*Southern Medicine and Surgery*, vol 111, #7, July) he states his frustration at the lack of ability of standard researchers to recognize their failure in treating viral diseases; they did not give big enough doses frequently enough. He found an unbelievable record of these failed studies in the ten years before he wrote this article.

He concentrated on the response of poliomyelitis to Vitamin C in this article. He knew that the virus was floating about in the blood stream and that large doses of Vitamin C would destroy

the virus before it got to the nervous system. Dr. Klenner reviewed the literature in 1948 because he was having consistent, positive responses with Vitamin C; he was encouraged when he read that some investigators had discovered low levels of C in the urine of humans and animals when infected with the polio virus. He felt there was a "relationship between the degree of Vitamin C saturation and the infectious and noninfectious state." An Australian, Heaslip, showed a "correlation between the severity of the attack and the level of urinary excretion of the vitamin." A "deficiency of Vitamin C in the diet predisposed to infection and to the severity of the attack."

One report he cited was published by Jungeblut in 1937. If Vitamin C was given during the incubation stage in monkeys, the subsequent disease was much less severe. But if the disease was in its fifth day, much larger doses of C were required. Even when but 100 mg of C were given in 24 hours to these experimental monkeys, there were six times the number of non-paralytic survivors as in the control group.

Dr. Sabin attempted to discredit the use of Vitamin C in controlling polio in monkeys but did not give enough (100 mg), and the monkeys had unmodified poliomyelitis. Scurvy is surely an invitation to infection, but the absence of scurvy does not assure an adequate immune system—especially when an infection invades. Malnutrition plays a definite role in susceptibility to virus infections. "Thousands of children owe their paralyzed limbs to this unfortunate blunder of Sabin."

He arbitrarily adopted the following routine injection schedule: 1000 to 2000 mg initially depending upon age. The intramuscular route was used for children under age four years. If the fever dropped in two hours, two more hours was allowed before the second dose. After 24 hours, if the fever remained down, this same dose was given every six hours for the next 48 hours. All sixty cases were well in 72 hours. Three however, had a relapse, so the C was continued in all 60 cases for another two days every eight to twelve hours.

Home treatment was 2000 mg injected every six hours plus 1000 to 2000 mg orally every two hours.

Two of the 60 patients had throat muscle paralysis and needed oxygen and drainage but were recovering in 36 hours.

In a follow up article on "The Vitamin and Massage Treatment for Acute Poliomyelitis" (*Southern Medicine and Surgery*, vol. 114, #8, August, 1952) he summarized his years of treatment of this scourge that hit every summer. He felt much of the fear

about the disease was due to reckless propaganda. It is a dramatic disease mainly affecting children. At that time the standard treatment was the splinting of the affected muscles for two to eight weeks to prevent any kind of motion. Surgery was then used to correct contractions and stabilize joints. At about that same time Sister Kenny was urging the use of hot moist packs and early passive motion to relieve spasm. Dr. Klenner used pillows to rest the affected muscles, immediate and continuous massage and passive motion, and, of course, Vitamin C to kill the virus, reduce the swelling in the brain, support the exhausted adrenals and rehabilitate damaged nerve tissue.

Reducing spinal fluid pressure is important to allow nutriments to reach the shocked nerve cells. The edema fluid "pressure in the central nervous system is the end result of the inflammatory reaction caused by the virus." It is probably augmented by a deficiency of Vitamin B_1. Early researchers tried to relieve this pressure by the use of hypertonic sugar (10% dextrose) solutions designed to pull the fluid from the brain, relieving the headache and allowing the circulation to open up sufficiently to permit nutriments into the dying cells. It is known that virus infections deplete the Vitamin C content of the adrenals. Chemical reactions follow resulting in high blood sugar; "apparently the adrenal medulla is released from its inhibiting mechanism allowing a concentration of free adrenalin in the blood high enough to cause vaso-constriction." Glucose would only serve to aggravate this artificial diabetes. (Maybe this is why some children develop diabetes after a virus infection, notably mumps.)

Vitamin C works as a destroyer of the virus but also as a safe and potent dehydrator and diuretic. (Most patients complain of thirst after an I.V. of ascorbic acid.) "Given in massive doses it will relieve the edema pressure of the cord and brain, thus allowing normal amounts of B_1 to reach chemically shocked nerve cells." He occasionally used hypertonic sodium lactate as a dehydrator.

Vitamin C is proven to be low in the blood and tissues of virus victims. In a loading test Heaslip found the urine of virus infected patients only revealed 20% of the ingested dose compared to healthy controls who excreted 44% of the swallowed C.

Jungeblut, a Vitamin C researcher, observed:

1) If a paralytic dose of polio virus were injected into the brains of monkeys, they all developed paralytic polio. If, however, Vitamin C was injected along with the virus, the animals remained free of the disease.

2) If monkeys were infected with a high dose of the virus, vitamin C by injection failed to modify the disease course.

3) If less virus were given and the Vitamin C was kept at 100 mg per day, the results were variable. Dr. Klenner felt that the virus dose was not standard, and the Vitamin C was too small and too infrequently given.

Dr. Klenner felt the best time to treat the virus was during the viremia stage; that is, when it was floating about in the blood stream and had not invaded the tissues. He repeats: "For optimum results the vitamin must be given in massive doses, every two to four hours, around the clock." Intestinal absorption is inconsistent; it must be given by needle.

Dr. Klenner wondered if some of the manifestation of polio might be due to mild scurvy. Fever, vomiting, diarrhea, aches are all seen with scurvy and with polio. Certainly when Vitamin C is given all these symptoms and signs disappear. Was it scurvy or polio?

He points out the similarities in pathology in the nerve cells of polio and beri-beri (B_1 deficiency). He believed this sequence: the virus causes a Vitamin C deficiency which stresses the medulla of the adrenal gland. Adrenalin is released which causes not only vascular constriction but affects carbohydrate metabolism, that is, it causes the blood sugar to rise. B1, thiamin, is absolutely necessary for sugar metabolism, and most diets are low in B_1. In addition, absorption of vitamins and foods are decreased when a disease is active. The adrenalin-induced constriction of the blood vessels about the intestines cuts some of the blood supply to the intestinal enzymes. Pyruvic acid accumulates at the neuromuscular junction. To metabolize pyruvates, an enzyme, cocarboxylase, is required. This enzyme has 2 B_1 molecules combined with phosphate; no B_1, no action. When pyruvates accumulate at this area, fatigue is the result. The flaccid paralysis of polio is related. B_1 therapy is indicated for polio and most cases of fatigue. "Nerve and muscle cells in a flaccid extremity may be only tired, but it is reasonable to believe that unless they are relieved promptly, they may die." Massage would improve the circulation and help remove toxic agents during this emergency.

In 1956 Dr. Klenner published, "Poliomyelitis—Case Histories" (*Tri-State Medical Journal*, Sept). He had a continuing supply of zingers he would throw at doctors who insisted on disregarding his logic. He quotes Ratner, "There are two ways of practicing the medical art: the first is to employ art; the second is to employ fancy." If one has used speculation, preconceived opinions and prejudice, then he is proceeding by emotions, faith and dreams. We must proceed by REASON. Husky put it, "Science commits suicide when it adopts a creed."

He was disturbed by the enthusiasm preached by the vaccine enthusiasts. They claim that the dead Salk vaccine was safe and that it makes antibodies. He was convinced that was not true. He argued for a live virus which would be more likely to give the recipients protective antibodies. 98% of all adults possess these antibodies. He seems to be arguing for all of us to acquire a natural immunity to all viral infections by taking enough Vitamin C to attenuate the disease no matter when it strikes.

He suggests for poliomyelitis:

1) Gentle massage for paralysis, continuous in the first few hours.

2) Ascorbic acid, best intravenously, at 300 to 500 mg per kg of weight. In small children: two to three grams intramuscularly every two to four hours. Ice on the injected muscle will assuage the pain.

3) He suggests penicillin and sulfa drugs would be worthwhile, (I would disagree).

4) Desoxycortisone acetate is suggested daily x 3.

5) Thiamine, 100 to 250 mg a day for three months will help rehabilitate the nerves.

6) And make the patient EAT.

He reports some severely ill adults with polio. They had a high fever, 4+ headaches on a scale of one to four, deep eye pain, stiff neck, muscle pain and spasm in the hamstring muscles. Blood tests were negative for bacterial infection.

Injections of twelve to twenty-two grams of Vitamin C were given every twelve hours for six to eight times. The headaches and fever were improved in 48 hours, and most were well in six to ten days at which time oral C was substituted: 1,500 mg or so at three to four hour intervals. Then the B1 for three months to heal the nerves.

Hepatitis

Vitamin C will cure **viral hepatitis** in two to four days and allow the patient to resume his usual activities. (500-700 mg/kg body weight taken orally; approximately 30 grams/24 hours in orange juice). Dr. Klenner reports that Dr. Bauer at the University Clinic at Basel, Switzerland, used just ten grams daily intravenously. It proved to be the best treatment available. He indicated that hepatitis (infectious and serum) can be reversed in a few days using intravenous Vitamin C. Heavy exercise had no effect on the outcome. [Freebern]

1) A 27 year old male with 103° temperature, nausea and jaundice of three days. 60 grams of sodium ascorbate in 600 cc of normal saline was given intravenously at 120 drops/minute. Five grams of Vitamin C was given orally every four hours around the clock. Fifteen grams of C was again given three hours after the first I.V. Another 60 grams of C was given intravenously twelve hours after the initial one (he used 5% glucose in water this time). That one took 75 minutes to accomplish. Then another fifteen grams of C intravenously after two more hours.

For the 30 hours of treatment he received 270 grams intravenously and 45 grams orally—no diarrhea. Temperature was normal at this time and urine clear of bile. Discharged from the hospital, he was back to work. C sets in as a flash oxidizer and helps the body manufacture interferon, a natural antiviral agent.

2) A 22 year old male with chills and fever and a diagnosis of viral hepatitis. His roommate had been admitted the day before. Fifteen grams of sodium ascorbate was given intravenously every twelve hours for three days, then once daily for six days. Sodium ascorbate was swallowed at five grams every four hours (135 grams intravenously, and 180 grams orally). No diarrhea appeared with these doses. He was sent home on the sixth day with no fever and no bile in the urine. Soon he was back to work. His roommate with just bed rest was in the hospital for 26 days!

3) Another male contracted hepatitis in Central America. There, he got lemon juice orally and rectally. Hot mud packs were placed over his liver. He had 104° degree temperature and was sent home. He was told to try bed rest and a protein diet. When Dr. Klenner saw him, he was jaundiced, temperature = 101° and had a very large tender liver. His I.V. was 30 grams sodium ascorbate and one gram calcium gluconate. Oral C: five grams

every four hours around the clock for three days. 400 mg adenosine I.M. 100,000 units of palmitate Vitamin A given daily. On the fourth day he got 70 grams ascorbate intravenously and one gram calcium. On the sixth day, he got another 70 grams intravenously, and on the seventh day the bilirubin in the serum was down to 1.9 compared to 98 on the first day; SGOT had fallen from 450 to 45. At home he took fifteen grams of C orally, 1,400 mg of choline three times a day plus a high protein and carbohydrate diet—no sequelae.

4) A 42 year old male suffering from chronic hepatitis had been unsuccessfully treated with steroids for seven months. He was given B complex and Vitamin C: 45 grams of sodium ascorbate plus one gram of calcium gluconate in 500 cc of water with 5% glucose was given intravenously three times a week. He took five grams of C orally every four hours. He was free of the disease in five months. Dr. Klenner felt if he had more massive and continuous doses in the hospital he would have been well in a few weeks, but his peers on the staff would have denied the patient this safe treatment.

Dr. Klenner reemphasized the point, "Sodium ascorbate in amounts ranging up to 900 mg per kilogram body weight every eight to twelve hours will effect cures in two to four days." Adenosine, 400 to 1,200 mg. intramuscularly, daily.

He felt that the risk of serum hepatitis from dialysis machines could be eliminated by flushing the machines with 50 grams of sodium ascorbate. When he needed to give a patient a blood transfusion he always added ten grams of sodium ascorbate to each pint. The Japanese, he said, have added but five grams of C to each unit of blood; result, no hepatitis and in thousands of cases.

Herpes Simplex & Zoster

Adenosine, 400 mg is given intramuscularly upon diagnosis. Fifteen grams of sodium ascorbate intravenously is next using a six cc syringe intravenously. Then a second dose of adenosine, 400 mg, 30 minutes after the C. Paint the lesion with tincture of benzoin. Then apply calomine lotion with 5% phenol. Continue to paint only the raw areas, but apply the calomine and phenol to entire area. Continue the injections every twelve hours for three days then daily for several days. A B complex capsule with 100 mg of

each of the B's along with "massive" amounts of Vitamin A orally are taken daily.

To control pain after the lesions heal, a daily I.V. is used containing thiamin, 1000 mg; pyridoxine, 300 mg; niacinamide, 600 mg, diluted to twenty cc with saline, daily for five days. He uses twenty-three gauge, one inch needle.

Herpes simplex must be treated as above for 72 hours as recurrences are common if treatment is shortened.

Fever blisters: three percent ointment of Vitamin C applied to the lips ten to fifteen times a day in a water soluble base speeds up the cure. A three percent solution of ascorbic acid used as a douche will heal a cervical erosion; direct application of this solution by the physician would be prudent. Twenty grams of C orally each day would "erase this form of malignancy." Dr. Klenner points out that the cancer seems to hit those with a hereditary tendency; a virus grows more eagerly in the susceptible. If there is a family tendency, oral C in large doses as a preventative makes sense.

Chicken Pox

Vitamin C orally is less reliable. Dr. Klenner noted his own daughter struggling with chicken pox. She was getting 24 grams a day, but papules spread and the itch was intense. After one gram of C intravenously, the itch stopped and she slept well for eight hours. A new I.V. was then given and no new rash appeared. (Untreated chicken pox victims break out for five full days). He noted this ability of C to terminate the usual progress of virus diseases.

One to three injections of 400 mg per kg every eight hours will dry up chicken pox in 24 hours. Controls nausea with one gram of C per five cc of fluid. Thirst is precluded if a glass of juice is drunk just before the I.V.

Hard Measles

He reports some cases:

I. A ten month old baby had the high fever, watery nose, dry cough, the red eyes, and the Koplik spots that gave the disease away: hard measles. He gave 1000 mg of C every four hours. After twelve hours the temperature had fallen to 97.5°; the cough had stopped and the redness of the membranes had cleared. Just to see if this improvement happened to be the natural course of the disease, he stopped the C for just eight hours. The fever rose to 103.4°. The C injections were resumed and the fever dropped in a few hours to 99°. 1000 mg was given every four hours; no rash developed.

II. An eight year old developed measles and mumps closely followed by encephalitis (T-104°). He could not eat, was stuporous and responded only to pain. Two hours after one injection of 2000 mg of Vitamin C, he sat up, ate a hearty meal and then played. In six hours he started to revert to his previous stupor, and the fever returned. Twelve hours after a second injection of two grams, and 1000 mg every two hours by mouth, he recovered. Dr. Klenner said, "The rude irritability shown prior to the first injection of Vitamin C was strikingly absent." I think what he wants the reader to grasp is that the symptoms of these devastating virus diseases are similar to the clues seen in scorbutic patients.

The bloody nose is common in measles, but can be relieved with one or two injections of Vitamin C (one to four grams depending on individual differences). Bleeding tendencies are common with scurvy. Did the disease allow the scurvy to become manifest? These symptoms are due to acute Vitamin C loss and are nature's way to ask for help.

Mumps

He reports cases of influenza, encephalitis, and measles easily cured with Vitamin C injections and oral doses. A 23 year old male developed mumps plus bilateral orchitis; his fever was 105°, and he was in overwhelming pain with "testicles the size of tennis balls." After one 1000 mg injection of Vitamin C intravenously the pain began to subside and after six more shots spaced

every two hours the pain was gone. The fever was normal in 36 hours. He was up, about and well in 60 hours. Total dose 25,000 mg.

Mononucleosis

Dr. Klenner felt mono is related to cancer because the same virus (Epstein-Barr) is found in Burkett's lymphoma. The disease, mono, can be eliminated with an I.V. of C in just a few days, "The actual time being directly proportional to the amount of the vitamin employed in relation to the severity of the infection." (Most of us use Dr. Cathcart's formula for the amount of C to be given: "I think this is a 50 gram disease: some fever, generalized aches, but ambulatory.") In one patient who was given the last rites by her church, the girl's mother took things into her own hands when the attending physician refused to give ascorbic acid. In each bottle of I.V. fluid she would secretly and quickly "tap in" 20 -30 grams of Vitamin C. The patient made an uneventful recovery. Her mother has her B.S. in nursing and has been a long time advocate of massive "C" therapy. (100 gram disease: 102-103°, holding down fluids but needs to stay in bed, miserable. 200 gram disease: 104 degree temperature, semi-comatose, somewhat dehydrated; hospitalization a good idea.)

The theory behind the use of adenosine: ascorbic acid stimulates an enzyme which breaks down the nucleic acid in the virus. Some individuals cannot manufacture enough adenosine to aid this enzyme activity. Purines are catabolized and are thus unavailable for the production of new viral nucleic acid.

Other Diseases

Dr. Klenner tells the reader about curing diphtheria with Vitamin C intravenously or intramuscularly. Bacillary dysentery is stopped in 48 hours with injections of C.

Pancreatitis. He treated but one case of this. He put 60 grams of sodium ascorbate in 1000 cc of 5% dextrose in water and let it drip in rapidly and the patient was able to go home in twelve hours.

Cardiovascular diseases, hypermenorrhea, peptic and duodenal ulcers, postoperative and radiation sickness, rheumatic fever, scarlet fever, poliomyelitis, acute and chronic pancreatitis, tularemia, whooping cough, and tuberculosis.

In one case of scarlet fever, antibiotics had no effect, but the fever responded dramatically when 50 grams of C was given intravenously.

Others - Massive doses for rheumatic fever. C will cure TB by removal of the organism's coat. Also pneumonia—(so it does not matter if one has a viral or bacterial pneumonia, it works).

Rocky Mountain Spotted Fever. Dr. Klenner was an authority in the treatment of this rather debilitating, serious disease because his practice was right in the middle of a constant locus of infection for tick bite fever.

Dr. Klenner had been taught in his training that there was no cure for it, only supportive. So when he was confronted with an obvious case—104.4° degree temperature, spots over body, coma, and positive blood test—he quickly gave 30 grams of C intravenously every six hours. The patient was given paraminobenzoic acid orally, six grams, every two hours x 3, then 4 grams every two hours for 24 hours, then 4 grams every 4 hours until his fever was gone for 24 hours. At about the sixth hour of treatment he became conscious and rational. He was sent home on the sixth day, fully recovered.

He reported the story of a twelve year old female with spots and 105° degree temperature. She was given chloroamphenicol and PABA but with only a poor response on the third day, so she was given an I.V. with 30 grams of C. In two hours she was almost well, cheerful and responsive. She was given 30 grams every eight hours and was well and home in seven days.

He wrote of his son, sick with R.M.S.F. who almost died. He needed Vitamin C, vibramycin (an antibiotic), PABA. Thiamin 1000 mg, B_2 300 mg, and B_3 500 mg were added to the I.V.'s daily. On the third day his temperature was still up (105 degrees); he was losing interest, and candida was developing. He finally got well on the fourth day.

What Dr. Klenner shows and tells us that with a devastating disease like R.M.S.F.; everything known to be helpful should be used. It seems obvious that antibiotics have a place, but Vitamin C is extremely useful. He pointed out one medical center used the large doses of PABA, and had no fatalities, except a six year old who was given only one half the calculated dose.

The C is given around the clock and at the 500-900 mg per kg body weight level. The disease "can always be reversed."

Dr. Klenner even treated **trichinosis**. In the *Tri-State Medical Journal* for April, 1954, an article entitled, "The Treatment with Massive Doses of Vitamin C and Para-Amino-benzoic Acid," Dr. Klenner pointed out that sixteen percent of humans in the U.S. have these worms. An acute case will have puffy eyelids, high eosinophil count in the blood stream, pain and swelling of the muscles, fever, profuse sweating, cough and profound weakness. The eosinophil count is high with some allergies also. He found that the lymphocytes stimulate anti-body formation and that the lymphocytes rise with the patient's recovery.

He reported the case of a man who had eaten sausage. He came down with a fever (104°), very puffy skin of the eyelids, hacking cough. Tests were positive for trichinosis and the eosinophil count was fifteen percent (normal less than four percent).

He was given large doses of C by needle because it would aid antibody formation and to detoxify him. Calcium gluconate, one gram every day for several days. Antibiotics were worthless. Fever rose to 106°, and he lapsed into a semi-coma. As it reminded Dr. Klenner of tick bite fever, he forced para-aminobenzoic acid down his throat. Four grams initially, then 3 grams every 2 hours. Eight hours after this was started he ate a full breakfast—the first in several days. His profuse sweating stopped. His temperature returned to normal. The PABA was stopped after two days to see the effect; in 36 hours the fever was back up to 101°. The sweating recurred.

The PABA was restarted at three grams every 2 hours during the day and every three hours at night. After 9 days he was well, the PABA was stopped and there was no recurrence.

Another patient, a woman, age 33, had a fever (103.4°), swollen lids, eosinophilis 30%, cough. She took 6 grams of PABA and then 3 grams every three hours for 37 hours then that amount every 4 hours. Fruit juice also. Twelve grams of C was given every twelve hours. Ten grams of C orally daily. She returned to work in eight days.

Dr Klenner had no explanation as to why PABA was a curative for trichinosis.

Tetanus (Lockjaw). In two articles in the *Tri-State Medical Journal* for June and July of 1954, he again scored some points for Vitamin C in "The History of Lockjaw", and "Recent Discoveries in the Treatment of Lockjaw."

He stated that lockjaw is not difficult to cure. He believed that doctors rely on antitoxin as the sole therapy because some "authority" recommends it. Many patients are sedated "to the point of narcosis."

He felt that the practice of injecting the tetanus antitoxin into the tissues near the wound was for medico-legal reasons as it had no benefit and might even be harmful. The antitoxin "cannot travel from the circulation into the nervous system and unless it be injected into the nervous tissue, it is relatively valueless."

Dr. Klenner reports on other research: Vitamin C inactivates the toxin of tetanus.

He recounted the history of a six year old boy who had never had any immunizations and developed tetanus after falling off his pony into some brush. Over a period of three weeks the boy developed increasing muscle tightness, abdominal cramps, inability to smile or open his mouth. Liquids were all he could manage. If stimulated his back would arch so his body was as a bridge resting on heels and back of head.

Dr. Klenner used Tolserol to control the convulsive spasm without sedating the senses unduly (the FDA has taken it off the market; Methocarbamol can be used intravenously with comparable results). The boy was treated with Vitamin C, penicillin, tetanus antitoxin and Tolserol. He spent eighteen (18) days in the hospital, but the use of tetanus antitoxin seemed to aggravate the seizures and required more Vitamin C, sedatives and its use definitely prolonged the hospitalization.

He received 2 to 4 grams of Vitamin C every four to six hours depending upon the symptoms and within one hour he would be calm and free of spasms. The idea was to help the body's natural detoxifying process. He also developed hives from the TAT or the penicillin and needed Benadryl and adrenalin for that.

He summarized the treatment of tetanus: (1) debride and clean any wound thoroughly. (He felt ether was good because it kills most bacteria without destroying tissue.) (2) 75,000 units antitoxin deep intramuscularly above the wound, (3) intravenous fluids, (4) massive doses of Vitamin C intravenously around the clock, (5) intradermal tetanus toxoid, 0.1 cc for five consecutive days, (6) intravenous Tolserol—now Methocarbamol. He felt all states should pass legislation requiring tetanus toxoid for all ages.

He felt that the number of fatalities from the disease were equal to the number of those who die from the treatment. He emphasized some principles of treatment 30 to 40 years ago that

many of us have forgotten: namely, do no harm, and the body has tremendous restorative powers if the doctor will supply it with the raw materials to promote recovery.

Urethritis: Dr. Klenner points to the study done by Rous in 1971. Only three grams of Vitamin C per day stopped the pain and frequency of urination in just four days. Apparently alkaline urine allows phosphate crystals to form; Vitamin C acidified the urine and the crystals went back into solution.

Chronic cystitis is usually associated with alkaline urine. Germs grow more easily in this alkaline urine. Vitamin C will discourage these bacteria and cut the chance of an ascending infection which might devastate the kidneys (pyelitis). Ten grams of C per day are suggested.

Other Conditions

Antabuse is a chemical used to discourage alcoholics from drinking. Alcohol and antabuse in the body form acetaldehyde; the person feels awful; weak, headaches even coma as this case illustrates. Dr. Klenner felt he may have been the first to recommend Vitamin C in the control of this chemical reaction. The man was on Antabuse. At one Christmas holiday his "friends" persuaded him to drink with them. Shortly thereafter he was brought to the emergency room where Dr. Klenner happened to be. He was unconscious with BP of 90/60. He suffered from shock (same clinical picture with barbiturate poisoning.) His I.V. was 500 ml of 10% glucose in water with 50 grams of sodium ascorbate. After 30 grams had run in, he awakened, felt well and wanted to go home. He got the whole 50 grams in three hours and was sent home. He also received oxygen by nasal mask.

The company that manufactures Antabuse suggests but one gram intravenously as an antidote calling it "massive." Dr. Klenner felt that amount was "without value."

For **acute alcoholism** Dr. Klenner has given 1000 mg of Thiamin intramuscularly every two hours until recovery. Pyridoxine, 500 mg is given every six hours. 40 grams of C intravenously will detoxify the patient.

Arthritis: Vitamin C counteracts the damaging effects of aspirin. C is the number one precursor for collagen formation. If serum levels of C are high, synovial fluid is thinner allowing for

easier joint movement. Those taking 15 to 25 grams daily will experience commensurate benefit. Prevention seems prudent. "A person who will take ten to twenty grams of ascorbic acid a day along with other nutrients might very well never develop arthritis."

Cancer: He cites Schlegel's (Tulane University) use of ascorbic acid (1.5 grams a day only) in preventing bladder cancer recurrence. "This is the so called wasted Vitamin C."

He "demonstrated that in the presence of ascorbic acid, carcinogenic metabolites will not develop in the urine. They suggested that spontaneous tumor formation is the result of faulty tryptophane metabolism while urine is retained in the bladder." Other researchers report that the depletion of mast cells from guinea pig skin was due to ascorbic acid deficiency. It suggests Vitamin C is necessary for the formation and maintenance of mast cells.

Vitamin C will control myelocytic leukemia with 25-30 grams orally daily. "How long must we wait for someone to start continuous ascorbic acid drip for two to three months, giving 100 to 300 grams each day, for various malignant conditions?

Small basal cell epithelioma: 30% Vitamin C ointment.

He cites a disturbing study: particles resembling viruses were found in some breast milk samples of women with breast cancer. Could this help to explain why some cancers seem to be "inherited?" It makes sense that all members of cancer prone families should be taking at least ten grams of C daily.

His protocol for treating cancer is printed here in total, although I do not understand the rationale for some of the ingredients. All of this is designed to kill the cancer cells by shoring up the immune system. He even recognized the therapeutic value for a positive attitude.

1) Use radioactive cobalt when and where indicated.

2) Give 45 grams of sodium ascorbate intravenously every twelve hours for one month. Then use 60 to 65 grams in 500 cc of normal saline or 5% dextrose in water for five days a week until a cure is obtained. It usually takes five months.

3) Each bottle is to contain one gram of calcium gluconate, a cc of some B complex, plus 1,200 mg of thiamin, 300 mg of pyridoxine, and 600 mg of niacinamide.

4) Oral sodium ascorbate, 5, 10, 20, grams daily. The dose depends upon the bowel tolerance.

5) Vitamin A palmitate, 50,000 units, daily, orally.

6) Pantothenic acid, (B5) one gram orally four times a day.

7) Amino acid protein powder with all the eighteen amino acids. 60 tablets each day or, if a powder, several tablespoons daily. This supports the immune system and the enzymes. Tyrosine should be taken separately, if possible, as this one makes the others work better; 500 mg tablets—six daily.

8) In addition a high protein diet using white chicken meat, fresh fish, chicken livers, and brown-shelled eggs. Beef (but once a week) should be as lean as possible: lean stew beef or sirloin tip are the best but have the butcher grind it three times. Hamburgers? Only once a week. No sugar and no starches. Fruit and fruit juices are permitted. Almonds are excellent.

9) 30 to 40 apricot almonds should be chewed every day in divided doses until a continuous bitter almond taste develops. At this point the patient cuts the dose in half. "This will form cyanide by way of the stomach acid. Cyanide will kill cancer cells. Vitamin C will protect one against the lethal effects of cyanide. It is the antidote. 500 mg tablets of vitamin B_{17} are available. One after each meal and at bed time." (Not everyone would agree with this part of the therapy. Cancer victims are still getting amygdalyn, B17, as injections from Mexico, but there is some doubt as to its efficacy. LHS)

10) Vitamin E, d-alpha tocopheryl acetate, 400 International unit size, 3,200 units daily. Don't take iron with it.

11) One pint of grape juice daily.

12) B complex tablets with 100 mg of each of the B's and 100 mcg of B_{12}. Six to eight tablets daily. Theragran-M or a similar capsule with all the minerals to replace what is being pulled out by the C.

13) Maintain the hemoglobin at 13 grams.

14) Keep a good attitude.

He reported a case of a man with lymph glands all over his body. He got the above treatment and although the glands increased in size for a while, his liver and spleen were back to normal size in four months. Dr. Klenner noticed a 'parachute-like' substance in the urine. Microscopic examination revealed they were clumps of cancer cells.

Another case was that of a woman who had an adenocarcinoma of two years duration. She had had chemotherapy, two surgeries and extensive radiation over her chest, especially the

neck area where the cancerous glands were. The cancer had spread to her lungs, her abdomen and six glands in her neck. Dr. Klenner gave her the above protocol. In three months the lesion in her lung had cleared and gone were the glands in her neck. After six months of intravenous Vitamin C and the B complex, the abdominal masses had disappeared, but she could not swallow food. The radiation had scarred her esophagus beyond dilatation and she refused more surgery. The cancer was gone; she died from starvation due to the radiation.

Dr Klenner summarized this paper with this: "The results suggest that larger daily amounts could be given in a hospital with faster results. I would suggest at least 100 grams in 1000 cc of fluid and given every twelve to 24 hours. The vitamins and the calcium gluconate also must be given." He thought interferon could be assayed while the patient is in the hospital. "How long will it take for the general population to challenge the drug cartel?"

There is a relationship of Vitamin C and **cholesterol**. Scorbutic guinea pigs have high cholesterol levels. Way back in 1947 high intravenous doses of Vitamin C were found effective in lowering cholesterol levels. One researcher [Spittle, 1971, Lancet] postulated that arteriosclerosis might be the end result of a long term deficiency or negative balance of Vitamin C. [Hecker] He and Dr. Klenner saw the cholesterol levels in the blood of subjects vary with the amount of C used. In one patient the cholesterol was lowered 42 mg percent in six weeks when his oral intake of Vitamin C was increased from 10 grams a day to 20 grams a day.

This all makes sense as "the main pathway of cholesterol catabolism is in conversion to bile salts." Vitamin C aids in the enzymatic conversion. Guinea pigs, who like humans cannot manufacture their own Vitamin C, will use up dietary Vitamin C if fed a high cholesterol diet. "Guinea Pigs fed a diet free of ascorbic acid showed a 600% acceleration in cholesterol formation in the adrenal glands." The Soviets have published many articles demonstrating these effects. This might explain why colds and virus flu are more common in the winter because fresh fruits and vegetables are less available and fat in the diet in the winter might use up Vitamin C faster. Gallstones can be made to develop in guinea pigs when fed a diet rich in cholesterol and low in C.

(In Medical School we were given the mnemonic to aid in the diagnosis of the gall stone victims: "Fair, fat, and forty." Susceptibility plus dietary factors; it makes a lot of sense.)

Dr. Klenner quotes the literature as to the use of Vitamin C in coronary artery disease in animals as well as humans. Arteriosclerosis develops in guinea pigs when fed a high cholesterol diet but develops rapidly in scorbutic animals even without exogenous cholesterol. Extra C was able to absorb the plaques. The diet is important, but extra C seems to be critical especially in those with a family tendency.

"We must protect our hearts from stress. Adequate Vitamin C is one answer." Where did Linus Pauling learn about his need for large doses? Probably from Dr. Klenner. "Mortality rate for middle aged people dropped significantly with increased doses of Vitamin C" [Dr. Klenner was quoting J. Stamler from *Comprehensive Treatment of Essential Hypertensive Diseases.* Monograph on Hypertension, Merck, Sharp and Dohme.] Pauling currently takes 18 grams a day. He seems to be doing well at the age of 86 years (July, 1987).

Cavities: A gram of Vitamin C every day for each year of life (five grams a day for the five year old) will prevent cavities. Ten grams a day from age ten years for a lifetime should maintain that advantage.

He quotes Shaw who felt that deposits on the teeth represent a pre-scurvy condition and that those so afflicted should be taking 2000 mg a day of C before some nasty virus strikes.

Disc, ruptured intervertebral: will be prevented with the ten grams a day dose. Adequate amounts seem necessary for disc metabolism and maintenance.

Corneal ulcers: healed with but 1.5 grams of C daily. The pain of a corneal burn was relieved immediately with twelve grams of C intravenously. The cornea was normal in 24 hours. [Boyd & Campbell]

Diabetes: He noted back in 1951 that the urine in his patients showed a reducing substance; severe virus infections will allow sugar to spill into the urine. Vitamin C acts as a reducing agent and it would appear that diabetes has been induced.

He reported the story of a seven year old diabetic, who developed measles, and his insulin requirements went from 5 units to more than 90 units a day, but with one gram of Vitamin C every four hours his infection and elevated blood sugar came under control. In these diabetic cases, the Vitamin C can be cut back to reasonable levels after the infection is under control. Large prolonged doses of "Vitamin C might prove undesirable due to its dehydrating and diuretic powers."

He feels that the pathological condition in this case means that adrenalin was flooding the boy's system. The regulator of the adrenalin mechanism had been removed so the constant supply caused a prolonged vascular constriction. This action on the blood vessels creates asphyxia of the tissues leading to acidosis. This acidity leads to adrenalin hyperglycemia. "Slight blood sugar elevation can be controlled with sodium bicarbonate. This vascular constriction is operative in the pancreas and could restrict the production of insulin and pancreatic enzymes."

As a matter of fact Dr. Klenner had been studying the effects of ten grams of C per day orally in patients with diabetes mellitus; 60% were able to control the condition with diet and C. The other 40% were able to reduce the insulin dose. Wounds healed more readily. The C assists the liver in its function of carbohydrate metabolism.

Glaucoma: Dr. Klenner was disturbed that marijuana was being used for the reduction of intraocular pressure. "One would need to be a chain smoker to maintain worthwhile levels." He quotes Bietti who used large C doses; Virno's patients use 35 grams of C (100 mg/kg after meals and bedtime) in divided doses during the 24 hours and this osmotic dehydration of the eyeball was safe and effective. "The size of the dose does make a difference—a real difference."

Dr. Klenner has found in his investigation of over 300 **pregnancies**, that the stress of the condition pushed the needs for C in women up to 15 grams a day. The human fetus is a parasite draining available C from the mother. We are all different and our needs for Vitamin C vary depending upon heredity, environment, stress—or its perception. He reminds us of Roger Williams' research in 1968 showing that some guinea pigs needed twenty times more Vitamin C than others to maintain their health. (The usual dose for pregnant humans: 4 grams daily in the first trimester; 6 grams daily in the second trimester; 8 to 10 grams in the third trimester). He obtained excellent results with these large doses of C in women who had been habitual aborters.[Greenblatt] One woman had had five miscarriages and then with the Vitamin C went on to have two normal pregnancies. The German literature is full of cases of these good results. Hemoglobin was easier to maintain, leg cramps were less (Vitamin C enhances iron and calcium and magnesium absorption). Striae gravidarum (stretch marks) were seldom encountered. Labor was shorter and less painful. No post partum hemorrhage. The peri-

neum was more elastic and if Vitamin C was maintained, it continued to remain firm.

Infants are robust with this Vitamin C. None required resuscitation. 50 mg of ascorbic acid was begun on the infant's second day and was gradually increased as time went on. A set of quadruplets in this series were healthy and taking milk on the second day. It is especially helpful for the rapidly growing connective tissue, teeth and blood vessels.[King]

Schizophrenia: Dr. Klenner reminds us of Hoffer and Osmond's work with niacin and Vitamin C back in the early 1950's. Six to 8 grams of C a day made the niacin work. One schizophrenic took 1 gram every hour for 48 hours and was completely recovered for six months with no further treatment. These megadoses halved the suicide rate. It has been demon-strated that schizophrenics burn up C ten times faster than the normal population. Most people show some spill of C in the urine at 4 grams per day; schizophrenics have to take ten times this amount before it can be detected. Dr. Klenner noticed this spillage in patients severely affected with a virus only after two to three days of large doses of C and improvement had begun. (Could schizophrenia be due to a virus?)

Burn: can be treated with Vitamin C. "30-100 grams of Vitamin C is the proper amount to employ." (500 mg per kg of body weight diluted to at least 18 cc per gram of C using 5% dextrose or saline in water or Ringer's solution, repeated every eight hours for several days, then at twelve hour intervals. Calcium gluconate is added.) "Vitamin C is given until healing takes place." It takes seven to thirty days depending upon the degree of the burn. It may prevent the need for grafting as it keeps the tissues oygenated thus preventing the blood from sludging.[Kniseley] On the fourth to fifth day the malodorous burn eschars will fall off leaving normal tissue. Vitamin C also eliminates pain; opiates are less necessary. (It stimulates endorphin produc-tion in the brain.)

In an article he published in the *ICAN Journal* (there is no date, but it was probably published in 1973 or 74) he states that Vitamin C is truly a miracle substance. He believed that large doses of intravenous Vitamin C early in the post-burn phase would eliminate the third degree burn with its infection and scarring. Blood sludging seems to be the basic villain that leads to rigid masses of eschar.[Berkeley] Oxygen is cut off. Tissue destruction is added to already burn-damaged skin. Vitamin C

levels in the blood and urine drop.[Lund & Levenson; Lam] Vitamin C is necessary for granulation tissue and skin formation.[Bergman] Three percent ascorbic acid solution is used as a spray every two to four hours for five days.[Klasson]

Pseudomonas: (a nasty bacteria, often seen in burn patients; very resistant to antibiotics): three percent spray plus massive injections.

Heat stroke: 500 mg per kg of body weight will reverse it.

Sunburn: One gram taken every one to two hours during exposure will prevent sunburn; an I.V. injection will quickly relieve the pain and erythema. Even second degree burns will be healed.

Prickly heat, heat stroke, heat collapse can all be treated; the latter needs twelve to forty grams intravenously. Electric shock patients must be given Vitamin C immediately after the accident—including lightning victims.

Vitamin C will control the side effects of **radiation** including radiation burns. "Who can say what 100 to 300 grams given intravenously daily for several months might accomplish in cancer? The potential is so great and the employment so elementary that only the illiterate will continue to deny its use."

Vitamin C inhibits the deaminizing enzymes from the damaged cells (due to burns, injury, infections). Histamine is produced by these enzymes. The shock is controlled.[Chambers & Pollock; Clark & Rossiter]

Surgery: Way back in 1960 and again in 1966, Dr. Klenner delivered papers before the Tri-State Medical Society calling attention to the "scurvy levels" of C in post-operative patients. The levels began to fall six hours after surgery and by 24 hours the levels were 3/4 lower than pre-op. Tensile strength of healing wounds is lowered if the plasma drops to scurvy levels. The lower the C levels the poorer the wound heals.[Bartlett, Lanman] Even as little a dose as 500 mg of C orally "was remarkable successful in preventing shock and weakness," following dental extraction, he quotes Schumacher.

He remembers a surgery case in 1949 when he assisted a surgeon in a potentially hopeless case. Extensive adhesions of the viscera defied separation. The surgeon repaired twenty tears and closed the abdomen. She should not have survived. The patient was given two grams of C every two hours intravenously for 48 hours and then four grams per day. In a day and a half she was up

walking and in a week discharged home with normal bowels and no pain.

30 grams should be given intravenously daily—post-operatively, until food and pills are tolerated orally.

Dr. Klenner used 10 grams preoperatively intravenously and ten grams in each post-operative bottle and then ten grams orally when eating was resumed. Surgical wounds rarely separated with this method. Fractures healed faster. (Some surgeons will give ten grams of Vitamin C at the end of the operation, and the patient is awake and alert in 60 seconds. No need for the nausea and vomiting in the recovery room.)

Toxins & Heavy Metals

Heavy Metal Poisonings: Especially lead and mercury—are controlled with Vitamin C injections and oral intake. An intake of Vitamin C daily will protect animals—and by extrapolation, humans—from fatal doses of mercury. If a guinea pig needed 200 mg one day to protect it from an otherwise fatal dose of mercury, the human would need 14 grams daily. Smaller doses would be able to protect the body from smaller amounts of the toxin.

Lead poisoning: 350 mg of Vitamin C per one kg of body weight taken intramuscularly every two to four hours; recovery in less than 72 hours.

Dr. Klenner found that the amount of C used "in any case is the all important factor. In 28 years of research we have observed that 30 grams each day is critical in terms of response" regardless of age and weight. (Barbiturate intoxication, snake bite and viral encephalitis may require larger doses in some individuals.)

Carbon monoxide (CO): poisoning is on the rise due to smoking and city living. CO interferes with oxygenation of tissues as it ties up hemoglobin. (The affinity of CO for hemoglobin is 300 times that of oxygen.) It would be especially dangerous in hearts already compromised by diseased coronary vessels; those vessels cannot dilate in times of extra need, e.g., CO poisoning. Smokers, and by inference, anyone exposed to CO or pollution should be taking extra Vitamin C. He points to the report [Pelletier] that shows when smokers quit, their "ascorbic level approaches that of the non-smoker." In acute CO poisoning: if 12 to 50 grams of Vitamin C is injected rapidly into the blood stream, it acts as an

oxidizer and will "pull CO from hemoglobin to form carbon dioxide" which is easily exhaled. A burn victim should immediately receive a dose of 500 mg of C per kg of body weight intravenously. It will "neutralize the CO or smoke poisoning while at the same time it will prevent blood sludging which in the major factor in the development of third degree burns."

An accidental carbon monoxide poisoning was reversed in ten minutes with 12 grams of ascorbic acid in a 50 cc syringe using a twenty gauge needle. ("We employ a twenty gauge needle when using a 50 cc syringe; a twenty-one gauge for a thirty cc syringe, a twenty-two gauge for a twenty cc syringe and a twenty-three gauge needle for a ten cc syringe").

Two boys were sprayed with pesticide, one received Vitamin C (10 grams) every eight hours and went home on the second day. The other boy only fluids; his skin showed a bad chemical burn; he died on the fifth day.

Vitamin C will reverse the shock and low blood pressure from barbiturates, muscarine, and formic acid. One suicidal patient ingested 2640 mg of barbiturate. Twelve grams was administered using a 50 cc syringe. In ten minutes the blood pressure rose from 60/0 to 100/60. 100 grams was given in the vein for three hours at which time the patient was awake. The use of large doses of C should be routine in these cases of chemical shock. "The needle used to give a syringeful of C was attached to a bottle of 5% dextrose in water with 50 grams of ascorbic acid. She received 125 grams of C. C not only assists with hepatic metabolism but also as a major diuretic, flushing these compounds out by way of the kidneys. Oxygen by nasal tube ran constantly."

Another patient had taken 2400 mg of Seconal plus paraaldehyde. She was awake after 42 grams of C was administered. The C was injected as fast as a twenty gauge needle could carry the flow. Consequent doses of 75 grams intravenously and thirty grams of C taken orally over a period of 24 hours saved her life.

Bites, Toxins, Allergies

In another *Tri-State Medical Journal* of December, 1957, he outlined the physiology and treatment of **Black Widow Spider** poisoning in a case history. Some of those bitten are not affected at all because the spider was out of poison, but some can be devastated and may die, partly because of poor resistance but also due to the quantity injected.

It can be confused with pancreatitis, renal colic, food poisoning, tetanus, angina, bowel obstruction, pneumonia, perforated ulcer. The abdominal wall muscles become rigid, the victims have cold sweat, their temperature and blood pressure shoot up, they vomit, have muscle twitches and spasms, cyanosis, chills, con-vulsions and delirium. The painful muscle spasms occur within minutes of the original bite. The cramps occur in all the large muscles of the body; the victims roll and toss and moan in agony.

Until someone used calcium gluconate, there were 90 ineffective treatments. An anti-venom is on the market, but severe reactions and even death have been attributed to its use.

The treatment Dr. Klenner suggests is his friend, Vitamin C, 350 mg per kg of body weight intravenously along with calcium gluconate.

His three and a half year old patient had been getting worse for 24 hours with abdominal cramps which the parents assumed were due to food poisoning. She became quieter, feverish, constipated and her abdomen was exquisitely tender. She was becoming stuporous.

Dr Klenner noted the red, swollen area around her naval, and two tiny spots about one eighth of an inch apart were noted in the middle: the fang marks of a Black Widow Spider. He gave 1 gram of calcium gluconate and 4 grams of Vitamin C intravenously. In 6 hours she was more responsive, and her temperature had dropped from 103 degrees to 101 degrees and she was given another four grams I.V.

In another six hours, her temperature was but 100 degrees, and she could swallow fluids. The next day she was active, and 50% of the discoloration had disappeared. She received another 4 grams of C intravenously and 3 grams intramuscularly. At home she swallowed 1 gram of C every three to four hours. An enema produced a bloody return. When she recovered, she remembered brushing "a big black bug off her stomach," before she took ill.

Dr. Klenner had treated eight cases of Black Widow Spider bites. "It is criminal to give these patients an opiate to relieve their pain, for in so doing you might add to their distress and actually precipitate a fatality."

"Some ascorbic acid behaves much like calcium in the body, and also acts synergistically with it, we elected to observe its action." The child was destined to die. "Some physicians would stand by and see their patient *die* rather than use ascorbic acid because in their finite minds it exists only as a vitamin."

Dr. Klenner was very confident about the benefits of intravenous Vitamin C to treat the poisonous effects of insects and reptiles. He felt all emergency rooms should be adequately stocked. He used sodium ascorbate, 7.5 grams in 30 ml. The syringes are 5 to 60 cc. The needles are 20 gauge (big), one inch long to 31 gauge (I have trouble believing this) one inch long. I get "miracle like responses."

Case 1: An eighteen year old female was treated just twenty minutes after a **hornet** bite. She was covered with hives and had shortness of breath and difficulty swallowing. In minutes after twelve grams of sodium ascorbate intravenously were pushed in with a 50 cc syringe her allergic symptoms were gone.

Dr. Klenner took ten grams of C dissolved in water orally and again in fifteen minutes to counteract the stings of fifteen yellow jackets. No symptoms.

Snakebite: He reported on a four year old girl bitten by a Highland Moccasin. She had severe pain in her leg and was vomiting within twenty minutes after the bite. Dr. Klenner gave four grams of C intravenously and within half an hour she had stopped crying and could now drink orangeade and began to laugh. "I'm all right now." She slept well all night, but because of a slight fever and tenderness, Dr. Klenner gave her another four grams intravenously and again that late afternoon. No antibiotics and no anti-serum were necessary.

Dr. Klenner had worked the schedule out on dogs and published it in hunting and fishing magazines. He has had many testimonials from satisfied doctors.

"All the venom that will be encountered exists as you see the patient. It is important to give sufficient sodium ascorbate to neutralize the bite. The more you give; the faster will be the cure. We now routinely give 10 to 15 grams sodium ascorbate depending on the weight of the victim. Then as much of the drug as can be tolerated by mouth is given, usually 5 grams, every four hours."

Usually without the use of Vitamin C patients are stuck in the hospital requiring hot packs, antibiotics, anti-serum and nursing care. Many end up with much scarring.

He recited the case of a man who was treated at another emergency room. The doctor tried to cut out the local bite area. When Dr. Klenner saw him it was badly infected and the temperature was 104°. Fifteen grams of C intravenously twice daily, 5 grams of C orally every four hours. Penicillin injected for the infection. He was back to work in seven days.

"Sodium ascorbate will cure any type of snake bite." The amounts and the speed of injection are critical. Forty to 60 grams intravenously as a starter. Klenner cites the 6500 deaths a year from snake bites, but many more from insects, bees, spider, plants and some caterpillars. They produce formic acid, histamine and specific toxin albumins. Some are neurotoxins; some cause capillary damage and hemorrhage. When cells are damaged proteins are deaminized, producing histamine and other toxic products; shock may occur. These deaminizing enzymes from the damaged cells are inhibited by Vitamin C. The pH of cells changes when cells are damaged; enzymes become destructive instead of constructive. C reverses this. Vitamin C is reduced in the serum of those in shock. 350-700 mg per kg body weight is the saving intravenous dose. In children up to two grams can be given in each of several areas (a twenty kg five year old could get two grams in each of four sites. Ice before and after the injection would control the pain).

He reports a case of a bite by a **Puss caterpillar.** The patient was going into shock with asphyxia and cyanosis. Dr Klenner whipped out his trusty syringe, filled it with 12 grams of C, squirted it into the man's veins and before he was done, the patient was improved enough to exclaim, "Thank God." And thank Dr. Klenner for figuring out what to do; the man would have died from shock if it had not been for the rapid infusion of C. Again, Dr. Klenner's maxim adds weight: Give the C while pondering the diagnosis.

Mosquito bites: eleven grams of C per day and 200 to 400 mg of B complex daily, both by mouth.

Poison Oak of Ivy: oral Vitamin C plus a paste of C powder will control the contact allergy in 24 hours.

Multiple Sclerosis & Myasthenia Gravis

Dr. Klenner also turned his attention to other nervous system diseases. In a paper entitled, "Response of Peripheral and Central Nerve Pathology to Mega-doses of the Vitamin B complex and other Metabolites," he focuses on Multiple Sclerosis and Myasthenia Gravis. (*Journal of Applied Nutrition*, Vol 25, #304, 1973).

He felt fatigue was the key to the understanding of the nervous system and its physiology. Substances are consumed for

the production of energy in the muscles. Products of this process accumulate in the tissue. Some diseases will prevent this use of available energy. The junction between neuron and neuron and the connection between motor nerves and the fibers of skeletal muscle are the two locations for normal fatigue.

Plants will wilt if fatigued; improper atmosphere and inadequate soil are responsible. Animals and humans need food, oxygen and faith to stay alive and healthy. He felt a share-cropper working in fresh open air would be less fatigued than a factory worker. Oxygen supply has much to do with fatigue.

If a muscle is repeatedly stimulated, it will become so exhausted it will fail to respond. Either the glycogen is used up, or the lactic acid has accumulated to a poisonous level.

(At this point he describes the aerobic and anaerobic metabolism of muscles. Phospho-creatine, adenosine triphosphate, calcium, magnesium and stored glycogen are all necessary for muscle function. Oxygen and small amounts of protein play a part in muscle contraction. Acetylcholine and its esterase are essential; too much or too little of any of these substances may prevent or slow down muscle action.)

Myasthenia Gravis is a disease in which too much pyruvic acid, due to faulty metabolism, affects the interaction of acetylcholine at the junction of the nerve and the muscle. He felt at that time that Multiple Sclerosis was due to "sluggish and bizarre muscle activity due to the inability to utilize essential factors because of mechanical and chemical road blocks."

He felt chemical fatigue was common. Body lassitude is the result of ingestion of sedatives, hypnotics, tranquilizers and even sodium bicarbonate. The latter can displace oxygen from hemoglobin, cutting down oxygenation of tissues. But Vitamin C will prevent this type of energy loss. Smoking aggravates this fatigue.

A person's muscle exhaustion point is determined by his oxygen absorbing and carbon dioxide discharging ability. At rest we use 200 to 300 cc of oxygen per minute. With sudden exertion this will rise to 2000 to 4000 cc. The more oxygen absorbed, the more lactic acid will be removed. Efficient use of oxygen is the key to adequate energy production and removal of wastes.

He described mental fatigue, active and passive. Passive is neurasthenia or brain fag: sensations of pressure in the head, poor memory, loss of ability to concentrate, irritability of temper, insomnia, anorexia and a variety of aches and pains.

Active mental fatigue is caused by continuous work, and this change is due to the sensory-motor exhaustion and not the mental

work per se. The primary area of fatigue is at the synapses which beg only diversion of interest and activity.

Adequate oxygen is assured if the lungs and hemoglobin are normal, but also by taking 10 to 30 grams of ascorbic acid by mouth every 24 hours. Oxygen is released for tissue use when ascorbic acid becomes dehydroascorbic acid. Enzymes are necessary to make all these reactions possible. Genetic faults manifest themselves through enzymatic deficiencies.

He outlines the nineteen stops from glucose to pyruvic acid which provides energy. This energy release depends upon oxygen and, Dr. Klenner emphasized, it is important to maintain good ventilation capacity, and, of course, a substantial intake of Vitamin C.

He felt pyruvic acid metabolism was important for the understanding of Myasthenia Gravis. Coenzyme A (COA, the active form of pantothenic acid) is in limited supply in M.G. It, COA, intercepts pyruvic acid at the end point of glucose metabolism. Another enzyme, cocarboxylase, splits the carboxyl group (COOH) away from pyruvic acid to form CO^2 and free hydrogen. The remaining two carbon fragment (acetate) join with coenzyme A to form acetyl coenzyme A. A high energy package named $NADH^2$ is formed from the carboxyl group from pyruvic acid and a sulfur group from coenzyme A.

Thiamine is important in all this energy production as two molecules of thiamine combined with two molecules of phosphoric acid become cocarboxylase. This enzyme must be present for the continuance of the metabolic cycle. When thiamin is deficient pyruvates and lactate accumulate, and at the neuromuscular junction the nerve end plate becomes swollen and poorly operative. That same enzyme is necessary for the syntheses of acetylcholine, the neurotransmitter that initiates muscle contraction. "Thiamine deficiency inhibits lactic acid metabolism." A thiamin deficiency means a cocarboxylase deficiency. Liver enzymes are mainly responsible for the phosphorylation of thiamin to cocarboxylase. Liver disease would obviously reduce this synthesis. "The activity of choline esterase (breaks down acetylcholine) is inhibited by this same double thiamine unit." (See also p. 20.)

In the conversion of fatty acids to energy some of the same enzymes are necessary: coenzyme A, hydrogen carriers (niacin-adenosine-dinucleotide) and Vitamin C. The latter acts as a hydrogen transport.

He puts Myasthenia Gravis and Multiple Sclerosis in the same therapeutic group as he found thiamin was the key to the therapy. M.G. is a genetically transmitted disease and M.S. is triggered by a virus and mimics poliomyelitis. Nerve damage in M.S. is due to a microscopic hemorrhages in the nervous system. During healing scar tissue contracts clamping off capillary flow and nutrition. This wasting results in loss of the myelin sheath protection.

He felt that remyelinating these damaged nerves was every bit as hopeful as the myelination that occurs normally in infancy with nothing more spectacular than breast milk. It requires two years of treatment to repair the damage caused by one year of the disease.

He cites works in the late thirties by Stern at Columbia University who used thiamin intraspinally for the treatment of Multiple Sclerosis with astonishing results. After 30 mg of thiamin was injected into the spinal canal of paralyzed M.S. victims, they had a temporary remission. They could walk for a while. And Stern felt it was a B_1 avitaminosis. It was known at that time that polyneuritis can cause degeneration of myelin sheaths.

Dr. Klenner felt that both M.G. and M.S. were basically a disturbance of supply and demand and not a functional defect nor impaired diffusion. He followed the belief of Dr. Leon Rosenberg (Yale) who distinguishes between vitamin deficiency diseases and vitamin dependency diseases. Some diseases would require 1000 times the calculated minimal daily requirement. Another investigator [Moore] used high intravenous doses of nicotinic acid (B_3) in the control of M.S.

Dr. Klenner's protocol for M.G. and M.S. in the 1950's:

1) **Thiamine**, orally: 300 to 500 mg 30 minutes before meals and at bedtime. Intramuscularly: 400 mg daily. Intravenously: 1000 mg (or 20 mg per kg body weight) two to three times a week. A 20 cc to 30 cc syringe with a one inch 22 gauge (or smaller) needle is used. The patient is to be supine and the pulse counted as the solution is injected. If the pulse rises, the solution is being injected too rapid-ly. Thiamin can be toxic but as soon as it is phosphorylated (in seconds) it becomes cocarboxylase, a necessary enzyme. Benadryl® intramuscularly stops any allergic reaction. Dr. Klenner reassures us that is injected slowly, no problem is encountered. The preser-vatives are more likely to cause reactions than the thiamin.

2) **Niacin or nicotinic acid,** (B_3), orally: 100 mg to 3000 mgs. thirty minutes before meals and at bedtime. The dose should be enough to produce a strong body flush. As it dilates the blood vessels—"even those that have been compressed by scar tissue" - a greater amount of the nutrients reach the muscle and nerve cells. Dr. Klenner felt it would be better to have a constant flush.

3) **Pyridoxine,** (B_6), orally: 100 to 200 mg before meals and at bedtime. Intramuscularly: 100 mg daily. Lack of B_6 causes anemia and neurological lesions. Intravenously: 300 mg. It is necessary for the metabolism of fatty and amino acids.

4) **Cobalamin,** (B_{12}), intramuscularly: 1000 mcg three times a week. B_{12} is a factor in the synthesis of myelin. In the treatment of neurological diseases, B_{12} reduces the requirement of choline.

5) **Ascorbic acid,** orally: 10 to 20 grams are to be taken daily in divided doses. Vitamin C will prevent a superimposed infection and aids in metabolism.

6) **Riboflavin,** (B_2), orally: 25 mg before meals and at bedtime. Intramuscularly: 40 to 80 mg daily. It is essential for metabolism of carbohydrates and in the regulatory function of the hormones involved in carbohydrate metabolism.

7) **d-alpha tocopherol acetate,** (Vitamin E), orally: 800 Units before meals and at bedtime. A deficiency results in demyelinization and distortion of the spinal cord nerves.

8) **Crude Liver,** daily injections. It contains factors still unknown but essential in metabolism. (Not manufactured now.)

9) **Adenosine-5-monophosphoric acid.** By adding this, all the chemistry dealing with cell metabolism is enhanced. It is essential to muscle function and, thus, energy.

10) **Choline,** orally: 700 to 1400 mg after each meal and at bedtime. It is in fat and nerve tissue. Acetylcholine plays an important role in humoral transmission of nerve impulses to effector organs like muscles.

11) **Lecithin,** orally: 1200 mg of soybean lecithin after each meal. Lecithin contains choline. It plays an important part in the structure of cell membranes. It is the lipid used in nerve tissue.

12) **Magnesium,** orally: 300 mg after each meal. Muscle activity requires magnesium. It also serves as an enzyme activator.

13) **Calcium gluconate,** orally: ten grain tablets. Two tablets after each meal and bedtime. Intravenously: one gram twice weekly. Helps muscle activity.

14) **Calcium pantothenate**, orally: 500 mg after each meal and at bedtime. This is a coenzyme A. It participates in the acetyla-tion of amines and metabolism of carbohydrates and fatty acids.

15) **Aminoacetic acid**. (Glycine), orally: one heaping tablespoon of the powder in a glass of milk four times a day. It is concerned with the syntheses of glutathione which is involved with intracellular oxidation and reduction. It stimulates the combustion of other tissue constituents. It has an adaptability in the detoxification process.

16) The hemoglobin should be kept to at least thirteen grams.

17) The diet is to be high protein including two to three eggs for breakfast.

18) One Theragran-M capsule daily for trace minerals.

19) **Dantrium** to relieve tremors. **Sysmmetrol** to relieve stiffness.

20) **Zinc gluconate**, orally: 20 mg three times a day helps Myasthenia Gravis.

This treatment works dramatically in M.G. An abbreviated schedule can be effective. One gram thiamin four times a day, niacin, enough to produce a flush four times a day, 200 mg calcium pantothenate four times a day, 100 mg pyridoxine four times a day, 10 grams of C in divided doses, glycine one tablet four times a day. This treatment is effective, but the full therapy will afford more dramatic response.

Dr. Klenner felt that most cases (80%) of Multiple Sclerosis had their origin in an illness—probably a coxsackie virus—compatible with a summer "flu". He mentioned other theories of the etiology of M.S., but was convinced that the scar tissue that forms around the nerves and produces the symptoms "is the end result of microscopic hemorrhages following virus invasion."

He believed that in M.G. the thymus gland was hyperplastic in many cases, and that muscle antibodies might account for others, but the importance of the excessive pyruvates at the neuromuscular junction has to be recognized as the basic cause of the hypotonia.

Here followed a number of a case histories of neurological diseases. One case of M.S. was of a male confined to a wheel chair in the hospital for two years. After a month of the treatment listed above his physician realized the improvement and sent

him home. In three years he was free from the disease and remained so as he continued in a modified treatment.

One M.G. case was of a male receiving prostigmine to which he was becoming unresponsive; thiamin was given intramuscularly along with other B vitamins three times a day. He was off the prostigmine in a year. He lived a normal life for eighteen years. He died of an unrelated cerebral accident.

A woman with polyneuritis began her illness with pain, burning and jerking of her legs accompanied by a high fever for ten days. Paralysis on left side plus weakness of the hands. She received oral and intramuscular injections. In several months intravenous vitamins were begun. In sixteen months she began to move her right leg. In five years from the beginning of the illness she began to get around with knee braces and a walker. In one more year she was able to move about without a back brace. Dr. Klenner felt if she had had 200 grams of ascorbic acid early, she would not have had the paralysis. She was also given 300 mg ribonucleic acid four times a week.

Another woman developed weakness in her extremities and was diagnosed as M.S. superimposed by a viral encephalitis. She was sent home with a wheelchair and was expected to die. She fully recovered on Dr. Klenner's protocol and continued to take her supplements.

A male, aged 28, developed numbness and loss of muscle control from the waist down about two years before he came to Dr. Klenner's treatment. He also had loss of bladder control. Dr. Klenner felt he had M.S. and put him on the above treatment. He was so much better in five weeks that he stopped treatment but the symptoms returned in three weeks, so he went back on the full treatment. Within a year he was back to full employment and able to follow his hobby as a crack pistol shooter.

A white 57 year old female began to be fatigued seven years before coming to Dr. Klenner. She had normal function after a night's sleep but had drooping eyelids and could not chew food after a few bites. Some doctors had called it *psychosomatic*. But it was quite obvious to Dr. Klenner that she had M.G. After 1000 mg of thiamine and 300 mg of pyridoxine administered intravenously in ten minute intervals, she was able to chew and make facial movements for the first time in three years. She has no symptoms as long as she continues the Klenner program.

He was quite definite: "Any victim of Multiple Sclerosis who will dramatically flush with the use of nicotinic acid and has not yet progressed to the stage of myelin degeneration, as witnessed

He was quite definite: "Any victim of Multiple Sclerosis who will dramatically flush with the use of nicotinic acid and has not yet progressed to the stage of myelin degeneration, as witnessed by sustained ankle clonus, can be *cured* with the adequate employment of thiamin, B complex proteins, lipids, carbohy-drates and injectable crude liver." "We had patients in wheel chairs who returned to normal activities after five to eight years of treatment." He also noted that if M.S. patients had a course of A.C.T.H. or cortisone, it extended the recovery period.

He noted the peripheral neuritis that is due to thiamin deficiency is common in chronic alcoholism.

"The treatment of M.G. is that of any pathology dealing with the interruption of the normal physiology of nerve cells." He had found that after successfully treating poliomyelitis victims with Vitamin C, he had to follow up with B vitamins for the nerve repair. He found the same results when treating damage to the spinal cord, whether trauma or viral infection. B_1 restores the ability of the nervous system to handle pyruvic acid and dextrose properly. Cocarboxylase may be the "food required for nerve life."

Since M.G. does not suffer the loss of myelin sheaths in vital areas, it does not have to be treated as rigorously as M.S. But the chemistry is more complex because muscles are involved. 900 different enzymes have been identified, therefore vitamin therapy must be intense. Of course, good liver function is necessary for good results. Dr. Klenner stumbled on a liver test: a test tube is filled with a morning urine specimen. In 24 hours there is usually a gelatinous mass accumulation at the bottom; the more the amount, the more the stress to the liver. Choline will prevent this from appearing. These are phosphates.

In an article, "Fatigue—Normal and Pathological", [*Southern Medicine and Surgery*, Volume III, #9, Sept. 1949], he had already had success with the vitamin treatment of M.S. and M.G. Dr. Klenner felt that fatigue is a warning signpost along the road of infectious disease. Heavy muscular exercise throws a great burden on the defensive mechanisms. The tissue of the adrenal cortex of rats is increased in weight after repeated periods of exercise.

He pointed out the importance of oxygen in the etiology of fatigue. If the air that is inhaled has but 0.1 percent of carbon monoxide, half the hemoglobin will be bound to the CO and unavailable for carrying oxygen to the tissues.

Poorly oxygenated blood can come from drugs, analgesics, and even sodium bicarbonate. A deficiency of B_1 will reduce tissue

(which breaks down acetylcholine needed at the nerve ending to activate the muscle). Shots of it are to be given daily from one to three weeks and then a 15 mg tablet orally every six hours.

B_1, 100 mg intramuscularly three times a day are given along with oral glycine. The other members of the B complex were added.

"Avitaminotic nerve fibers have a hunger for this vitamin (B_1), and it is easy to know when the optimum return of function is obtained. When the nerve structure has been repaired, the patient will become irritable, the appetite will be lost and he or she will experience a sensation of heaviness and stiffness of the muscles of the extremities. Sufficient Vitamin C is then given by mouth to maintain optimum therapeutics."

As to M.S. the diagnosis is determined by the "evidence of lesions affecting chiefly the white matter, scattered in time and space: palsy of one of the oculomotor nerves, nystagmus, slight ataxia of arms, absence of abdominal reflexes and other scattered neurological anomalies (such as poor bladder control and patchy sensory changes).

Subtle forms of encephalitis might cause changes in the nervous system preventing a normal supply of Vitamin B_1 from reaching distal parts of the nervous system. He noted the increased incidence of M.S. after the encephalitis epidemic of 1920-26 and in 1934. Also unrecognized cases of poliomyelitis may be an important factor in the cause of avitaminotic symptoms in the central nervous system. This could happen in these disease conditions even with sufficient B_1 in the diet; the vitamin is not diffused properly. Initially it is the virus and when that dies down, it is scar tissue blocking the circulation. The capillaries must be opened and extra B_1 must be supplied with the protocol cited above.

In a letter to the editor of the *Tri-State Medical Journal*, Oct. 1954, he boldly stated that he was curing Myasthenia Gravis. He seemed more definite about the biochemistry: pyruvic acid, if allowed to accumulate, will produce a cloudy swelling of the distal portion of nerves, and that the primary biochemical fault in B1 deficiency is the failure of the organism to metabolize pyruvic acid. Also he realized that creatine (needed for normal muscle function) is formed by the body when choline and urea combine. Choline is in short supply in M.G. unless supplemented orally. He felt glycine should be supplemented in the diet because it yields urea. Protein is needed in the diet to sustain muscle wear and tear.

felt glycine should be supplemented in the diet because it yields urea. Protein is needed in the diet to sustain muscle wear and tear. Tyrosine is needed to help turn ingested protein into usable amino acids and Vitamin C is essential in this reaction.

This leads us to paper he put together in 1980. It was not published: "Multiple Sclerosis Diagnosis and Treatment Suggestions."

He again stated the origin was due to a childhood virus of the coxsackie group mimicking red measles. The initial illness was a severe lung infection or an encephalitis which subsided only to recur as M.S. twenty to thirty year later. 70% of cases have the onset of their M.S. symptoms from the age of 20-40 years.

40% will have optic neuritis as the initial symptom, then optic atrophy may follow. Most will notice double vision early. Weakness, loss of reflexes, numbness in fingers, dizziness, loss of position sense, feeling heat over spine, rheumatoid arthritis may occur concurrently (shortage of B vitamins), intention tremor, poor bladder control, and spastic paraplegia.

His treatment suggestion at this time (1980) consisted of:

1) Thiamin HCI (Vitamin B_1) one gram (1000 mg) taken thirty minutes before meals and at bedtime.

2) Nicotinic Acid (Niacin; Vitamin B_3) 50 mg to 300 mg, depending on flushing of skin, thirty minutes before meals and bed time.

3) Riboflavin (Vitamin B_2) 250 mg after meals and bed time.

4) Pyridoxine (Vitamin B_6) 100 mg after meals and bed time.

5) Calcium pantothenate (pantothenate acid/Vitamin B_5) one gram after meals and bed time.

6) Lecithin. 1200 mg (19 grains) one capsule after meals and at bed time with two percent milk.

7) Vitamin A (palmitate) one 50,000 unit capsule after breakfast and supper.

8) Vitamin E (d-alpha tocopheryl acetate) 400 I. units. Four capsules at bedtime.

9) Niacinamide (Vitamin B_3 amide) 500 mg. tablets. One after meals.

10) Magnesium oxide 300 mg tablet. One tablet after meals and before bed time.

13) Trinsicon or Feosol. One capsule twice daily or sufficient to maintain a hemoglobin of at least thirteen grams.

14) Folic acid. Two milligrams after each meal. Only recommended when the hemoglobin will not respond to iron treatment.

15) Sunflower seed oil capsules. One capsule after meals and bed time.

16) Lipotriad. Three capsules yields 700 mg of choline. Two capsules after each meal. It is used as a methylating agent.

17) Calcium gluconate, 10 grain tablets. Twelve tablets daily. May be omitted if patient can drink a quart of milk a day.

18) Linseed oil capsules. One capsule after meals and at bedtime. Contains linolenic, oleic and linoleic acids.

19) Muscle relaxants. Prescribed according to patient needs.

20) Calcium Orotate (Vitamin B_{13}) 500 mg tablet. One after meals and at bed time.

21) Calcium pangamate, 50 mg tablet. One tablet twice daily.

22) Protein supplement containing eighteen amino acids. One ounce in a glass of milk four times a day. Some of the above can be taken with this drink.

Intramuscular injection, given five to seven days each week.:

1) 2 cc crude liver daily. (Hard to get now. I can't find it.)

2) 2cc Thiamin HCI, (B_1), 400 mg daily.

3) 1.5-2cc Pyridoxine, (B_6), 150 mg daily. Add to B_{12}.

4) 1.5-2cc Cyanocobalamin, (B_{12}), 1500 mcg daily. Add to B_6.

5) 1.5-2cc Riboflavin, (B_2), 75 mg daily. Add to B_3 amide.

6) 1.5-2cc Niacinamide, (B_3), 150 mg daily. Add to B_2.

Some of the above vitamins are given one to three times each week:

Thiamin HCI, 1000 mg; Pyridoxine, 300 mg; Niacinamide, 500 mg; dilute these to 20 cc with saline solution or best, sodium ascorbate (250 mg/cc). Give slowly with a 23 gauge needle, one inch long. Pulse is taken during the injection; if the pulse rises, the injection speed is slowed.

He found that RNA and DNA tablets, 100 mg of each, were helpful to some patients; one to three of each daily along with the other vitamins. Inositol, 500 mg, one to three times a day may help.

the other vitamins. Inositol, 500 mg, one to three times a day may help.

Because of the large number of pills and capsules to be taken daily, Dr. Klenner suggested they be put into a blender along with a protein powder, milk, vanilla, and carob to make a tasty drink. They all might go down more easily.

He cited some cases:

1) Female developed weakness in extremities in 1961 (refer to page 48). She was sent home to deteriorate. Dr. Klenner began his program, and she is now cured and has been leading an active life for over 21 years. "The central nervous system can be regenerated, but it does require time. Ten years was given to the restitution of her entire nervous pathways." She is "full of vim, vigor, and vitality."

2) Another woman had complete paralysis of both legs and left arm. She required a steel brace from hips to neck. After two years of this she was taken to Dr. Klenner and started on the above therapy. In sixteen months she could move her right leg and left arm. In three years she began to move her left foot and button her blouse. In nine years she could stand unaided. A modern day miracle, "Enzyme, co-enzyme, and metabolite theory is the correct approach to the rehabilitation of the central system."

3) In 1918 a male was diagnosed as M.S. because of blurred vision, numbness, and low back pain. In four months Dr. Klenner began his program and in six months the man was back driving the fire truck. He continued to improve and cut fire wood during off hours. Early M.S. cases will respond quickly.

4) Another female with dizziness, poor vision, lateral, and rotatory nystagmus (dancing eyeballs). The nausea was so profound; she could not swallow the oral vitamins. But after one year of the vitamin injections she could do the oral route. From *not* being able to read a billboard, she can now read large type books. The nystagmus is gone, but she needs a cane to ambulate.

Complications

Dr. Klenner reports on a few minor complications. Some diarrhea might have been due to sodium bisulfate. Induration after intramuscular injections was found to be due to the Vitamin C not being injected deeply enough into the muscle. (One had to be drained—a sterile abscess.) If the concentration was 1 gram to 5 cc it caused a vein spasm up the arm from the injection site in three cases. A thrombosis of the vein occurred in but one case. A minor face rash developed in a few that cleared after the C was stopped.

Calcium seemed to enhance the effects of the C when both were give simultaneously. But a gram of just the calcium given intravenously can slow the heart rate to a dangerous degree.

Safety

He has some reassuring words for those who feel kidney stones are an automatic result of large doses of Vitamin C. He says in all cases a *stasis* of urine flow "and a concentrated urine appear to be the chief physiological factors." Oxalic acid precipitates out of solution only from a neutral or alkaline solution—pH 7 to pH 10. Urine pH in those consuming ten grams of Vitamin C daily is about 6. Even in diabetics who take this large amount of C (10 grams), the urinary oxalate excretion remains relatively unchanged. "Vitamin C is an excellent diuretic. No urinarey stasis; no urine concentration. The ascorbic acid/kidney stone story is a myth." One more *bon mot*: "Methylene will dissolve calcium oxalate stones, if the patient is given 65 mg orally two to three times a day," he learned from *Medical World News* (Smith, M.J.V., M.D.: Dec. 4, 1970).

(90% of all stones are calcium stones. Calcium is soluble in acid media. Vitamin C acidifies the urine. Acid urine discourages the growth of bacteria. Although uric acid stones are theoretically possible with high doses of C and a low urinary pH, none have been reported.)

A report in *N.E.J.M.* on 11 Feb, 1971 [Merton Lamden] suggested that large doses of C might cause diabetes in humans. The experiment was done in rats, but the dose translation in humans would have amounted to 5000 grams! [Paterson] Maybe there *is* a toxic dose. (Dr. Klenner at the time of that writing had been on 10

to 20 grams of C daily for eighteen years. No diabetes, and no kidney stones). This study has no relationship to the use of therapeutic doses of C.

Lamden found that an ingestion of 9 grams of C/day resulted in oxalate spills of 68 mg. in the urine per 24 hours. Controls without C spilled 64 mg./24 hours. Not a big difference.

He reiterates the safety of large doses of C. He states that plasma doses of greater than twenty times normal produce no ill effects. Diarrhea is the most common side effect of large doses. Some notice thickening of subcutaneous tissue is the C is not injected deeply enough into the muscle. (That induration will eventually resolve.) Some will complain of venous irritation and spasm if the intravenous Vitamin C is too concentrated or too rapidly injected. (C mixed with calcium will reduce this irritation.) A rare thrombosis may occur if the concentration of the C is greater than 500 mg per cc. Some will faint if the injection is given too rapidly. (It is best to have the patient lie flat.) Large doses by mouth may cause a genital or anal rash and itch.

He also showed how safe large doses of C were. He gave 200 patients 500 to 1000 mg of C every four to six hours for five to ten days. No laboratory abnormalities were found in blood or urine and no symptoms were noted except one percent who developed vomiting; he assumed from a hypersensitive stomach. And these patients had no virus infection to "assist in destroying the vitamin."

One volunteer received 100,000 mg in a twelve day period; no problems.

Reluctance by Orthodox Medicine to Accept

Dr. Klenner knew all this way back thirty to forty years ago. Why has the medical community taken so long to use this cheap, safe, and valuable tool to control infections? Dr. Irwin Stone, Dr. Linus Pauling, and Dr. Robert Cathcart have tried to popularize this method and were only met with poor press and ridicule. Are the drug manufacturers organized into a conspiracy too powerful to overcome? M.D. types will believe what is published in their favorite medical journals, but Vitamin C therapy studies are not seen in medical journals because much of the income to the publishers comes from drug manufacturers. Vitamin C use represents a

threat to their income; it cannot be patented. Maybe if patients *demanded* the therapeutic use of Vitamin C from their doctors, the doctors would become familiar with its use and add it to their therapeutic tools. Their colleagues would hoot: "Ha ha, you are a quack. You were suckered into that."

The doctor could respond: "I didn't want to, but the patient made me do it."

But the evidence for its use seems to be there, right in the medical literature, but how many read the *Journal of Preventative Medicine*?

Dr. Klenner writes clearly and cogently. He is cheerful, even enthusiastic. And I find no bitterness due to the frustrations about the poor acceptance of his research by the medical establishment. He had done his own literature search and finds plenty of confirmation for his therapies in animal and human experiments.

"Many physicians refuse to employ Vitamin C in the amounts suggested, simply because it is counter to their fixed ideas of what is reasonable." The new products advertised by an alert drug company are okay to them. Dr. Klenner tells of many letters from doctors who used this C treatment on poliomyelitis—in patients, their own children and even themselves. They were cured.

Dr. Klenner commented that if these spectacular results had been produced at a teaching and research center and then published, the medical community might pay some attention and the use of C would become standard and routine. "There is no doubt that physicians are being brain-washed with the current journal advertising." He uses an appropriate quote from Herber Spencer, "...to keep a man in everlasting ignorance... condemnation without investigation."

He blamed the National Research Council who planted the concept in doctors' brains that any dose above 125 mg per day is spilled by way of the kidneys. It was like any drug, the council implied, and more was no more effective than the dinky dose that protected the human from scurvy. Doctors do not seem to realize that the need for C is different "in each one of us either because of the individual kidney threshold level or because of greater requirements necessitated by pathology."

A Few Quotes

He reminds us of Hippocrates. He felt that of several remedies physicians would choose the least sensational. Vitamin C meets those requirements.

"Adults taking at least ten grams of ascorbic acid daily and children under ten at least one gram for each year of life will find that the brain will be clearer, the mind more active, the body less wearied, and the memory more retentive."

Another summary by Dr. Klenner: "I have never seen a patient that Vitamin C would not benefit."

He discovered the tremendous therapeutic power of Vitamin C to aid the immune system, to act as an antihistamine, and to neutralize toxins. Again, let us not forget what comes through after examining all these published reports: "Vitamin C should be given to the patient while the doctors ponder the diagnosis."

References

Page II:

Pauling, L.: *Vitamin C and the Common Cold*, W. F. Freeman & Co, San Francisco, 1970.

Brody, H.D.: *J. Amer Diet. Assoc.*, 29: 588, 1953.

Page 2, How It Works:

Klenner, F.R.: Virus Pneumonia and its Treatment with Vitamin C. *Southern Med. Surg.*, Feb. 1948

Klenner, F.R.: Encephalitis as a Sequela of the Pneumonias. *Tri-State Med. J.*, Feb. 1960.

Klenner, F.R.: An Insidious Virus. *Tri-State Med J*, June 1957.

Burns, J.J., *et al*: *J. Biol. Chem.*, 207:679, 1954.

Salomon, L.L., Conney, A.H., *et al*: *NY Acad Science*, 92:115, 1961.

Burns. J.J.: *Am. J. Med.* 26:740, 1959.

Stone, I.: Brief proposal *per. Biol Med.*, Autumn, 1966.

Page 1-2:

Arber, E: *The Story of the Pilgrim Fathers*, 1897.

Correspondence with colleague from Puerto Rico.

Kline, A.B. and Eheart, M.S. Variations in the Ascorbic Acid Requirements for Saturation of Nine Normal Young Women, *J. Nutrition* 28: 413, 1944.

Joliffe, N. Preventive and Therapeutic Use of Vitamins, *JAMA*, 129:613, 1945.

Crandon, J.H., Lund, C.C. and Dill, D.B.:.Experimental Human Scurvy. *N Eng J Med.*, 223: 353, 1940.

Page 2-3:

Klenner, F.R.: Massive Doses of Vitamin C and the Virus Diseases. *J. So Med. & Surg.*, 113:#4, Apr. 1951.

Larson, C.: *Ordinace*, pp. 359-360, Jan-Feb, 1967.

Page 3:

Starr, T.J.: *Hospital Practice*, 52, Nov 1968.

Kropowski, H.: *Med. World News*,, p 24, June 19,, 1970.

Lojkin cited in Klenner's paper: Massive Doses of Vitamin C and the Virus Diseases.

McCall, C.E., and Copper, R.,: Vitamin C Shows Promise as a Bactericidal Agent. *Bowman Gray School Med. Alumni News*, 14:1, Feb, 1972

Wintrobe, M.M.: *Clinical Hematology.*, Lea and Febiger, 3rd Ed 1952.

Nossal, G. Most Killed Vaccines in Use not Termed Fit for a Mouse. *Medical Tribune*, Apr. 5, 1972.

Klegler, Guggenheim and Warburg: Vitamin C vs. Toxins, 1938. (No reference cited.)

Page 4:

Harde and Benjamin (1934-1935) found the vitamin C fraction of the adrenal glands greatly reduced in monkeys killed or paralyzed by the virus of poliomyelitis.

Yavorsky, Almoden and King (1934) reported identical findings in humans having died of various infectious agents.

Page 4,5:

Klenner, F.R.: An insidious virus. *Tri-State Med. J.*, June 1957

Klenner, F.R.: Virus Pneumonia and its Treatment with Vitamin C. *Southern Med. Surg.*, Feb. 1948.

Klenner, F.R.: Encephalitis as a Sequela of the Pneumonias. *Tri-State Med J.*, Feb, 1960

Gothlin, G.F.: A Method of Establishing the Vitamin C Standard of Requirement of Physically Healthy Individuals by Testing the Strength of Their Capillaries. (No reference cited.)

Baker, A.B. and Noran, J.A.: Changes in the Central Nervous System Associated with Encephalitis Complicating Pneumonia. *Archives of Internal Med.*, Vol 76: 146-153, July-Dec. 1945.

Krumholz, S. and Luhan, J.A.: Encephalitis Associated with Herpes Zoster. *Arch Neur and Psych*, 53: 59-67 Jan-Jun, 1945.

Bakay, L.: *The Blood-Brain Barrier*, C C. Thomas, Pub., Springfield, IL 1956

Chambers, R. and Zweifach, B.W.: Intercellular Cement and Capillary Permeability, *Physiol Rev.*, 27: 436-463, 1947.

Youmans, J.B.: *Nutritional Deficiencies*, 1941.

Page 5:

Youmans, J.B.: *Nutritional Deficiencies*, 1941.

Hawley, E.E., Frazer, J.P., Button, L.L. and Stevens, D.J.: The Effect of the Administration of Sodium Bicarbonate and of Ammonium Chloride on the Amount of Ascorbic Acid Found in the Urine. *J. Nutrition*, 12:215 (August) 1936.

Klenner, F.R.: Significance of High Daily Intake of Ascorbic Acid in Preventive Medicine. *J. Intl Acad Prev Med.*, 1:45-69, Spring, 1974.

Klenner, F.R.: Use of Vitamin C as an Antibiotic. *J. of Appl Nutrit.*, 6: 1953 (Paper presented at AAN Convention, May, 1963, Pasadena, CA.)

Page 6, Dosage:

Klenner, F.R.: Massive Doses of Vitamin C and the Virus Diseases. *J. So Med & Surg*, 113: #4, Apr. 1951.

Shaw, *et al*: Acute and Chronic Ascorbic Deficiencies in Rhesus Monkeys. *J. Nutrition*, 29: 365, 1945

Rivers, T.M.: Immunological and Serological Phenomena in Poliomyelitis. Lecture III, Infantile Paralysis, 1941.

Page 7:

Klenner, F.R.: Significance of High Daily Intake. *op cit*

Page 8:

Klenner, F.R.: Use of Vitamin C as An Antibiotic, *op cit*.

Page 9 Tests:

Klenner, F.R.: A New Office Procedure for the Determination of Plasma Levels for Ascorbic Acid. *Tri-State Med J.*, 5, 1956.

Lingual tests:

Ringsdorf, W.M. & Cheraskin, E.: *Sec. Oral Med.*, U of AL Med Center, Birmingham, AL

Page 9-16, Insidious Virus:

Klenner, F.R.: An Insidious Virus, op cit.

Klenner, F.R.: The Clinical Evaluation and Treatment of a Deadly Syndrome Caused by an Insidious Virus. *Tri-State Med J.*, Oct. 1958.

Page 15, Virus Pneumonia:

Klenner, F.R.: Virus Pneumonia and its Treatment with Vitamin C. *So Med & Surg*, Feb. 1948.

Klenner, F.R.: Encephalitis as a Sequela of the Pneumonias. *op cit ibid*

Page 15, (Herpes Encephalitis):

Lerner, M, *et al*: Detecting Herpes Encephalitis Earlier. *Med World News*, May 20, 1972.

Page 15, (Xray Therapy):

Oppenheimer, A.: Roentgen Therapy of Virus Pneumonia. *Amer J of Roentgen.*, 49: #5.

Page 17-21, Poliomyelitis:

Klenner, F.R.: The Treatment of Poliomyelitis and Other Virus Diseases With Vitamin C. *So Med & Surg*, Vol. III: #7, July 1949.

Klenner, F.R.: The Vitamin and Massage Treatment for Acute Poliomyelitis. *So Med & Surg*, 114: #8, August 1952.

Klenner, F.R.: Poliomyelitis—Case Histories. *Tri-State Med J.*, Sept 1956.

Sabin, A.B.: Vitamin C in Relation to Experimental Poliomyelitis. *J Exp Med.*, 69: 507, 1939.

Heaslip, *Australian J. of Esp Biol. & Med.*, 1948.

Jungeblut, C.W.: Vitamin C Therapy and Prophylaxis in Experimental Poliomyelitis. *J Exper Med.*, 65: 127, 1937.

Jungeblut, C.W.: Further Observations on Vitamin C Therapy in Experimantal Poliomyelitis. *J. Exper. Med.*, 66: 450, 1937.

Bodian, D. and Horstmann, D.: Review of Their Work. *JAMA.* 149: Aug 30, 1952.

Page 22-23, Hepatitis:

Freebern, R.K. & Repsher, L.R.: *Mod. World News*, Jan 23, 1970.

Klenner, F.R.: Unpublished paper.

Klenner, F.R.: Significance of High Daily Intake. *op cit.*, page 56.

Klenner, F.R.: Massive Doses of Vitamin C, *op cit.*

Klenner, F.R.: Observations on the Dose and Administration, *op cit.* Page 23-24, Herpes:

Klenner, F.R.: Significance, *ibid*, page 64.

Stephens, J.C. and Cook, M.: Cases of the Hidden Herpes Virus, *Med World News*, May 26, 1972.

Goodpasture, E.W.: Case of the Hidden Herpes Virus. *Med World News*, Feb 25, 1972.

Roizman, B. *et al*: Tracing Herpes Viruses. *Med World News*, Oct 1, 1971.

Klenner, F.R.: Use of Vitamin C as an Antibiotic. *op cit.*

Page 24-25, Chickenpox and Measles:

Klenner, F.R.: Massive Doses, *op cit.*

Klenner, F.R.: The use of Vitamin C as an Antibiotic. *op cit.*

Page 26, Infectious Mononucleosis:

Hellne, G. and Helene, W.: EB Virus in the Etiology of Infectious Mononucleosis, *Hosp Pract.*, July, 1970.

Niderman, J.C.: College Findings tie Mono to EB virus. *Med World News*, Dec 1968.

Klenner, F.R.: Observations of the Dose and Administration. *op cit.*

Page 27,

Klenner, F.R.: Unpublished work on RMSF and tick bite fever.

Page 28 Trichinosis:

Klenner, F.R.: The Treatment of Trichinosis with Massive Doses of Vitamin C and Para-aminobenzoic Acid. *Tri-State Medical J.*, April 1954.

Page 30, Urethritis:

Rous, S.: Urethritis in Men. *NY Soc Med.*, Dec 15, 1971.

Page 30, Antabuse:

Klenner, F.R.: Unpublished paper.

Page 31, Arthritis:

Klenner, F.R.: Significance. *op cit.*

Abrams, E. and Sandson, J.: *Ann Rheum Dis.*, 27: 1964.

Page 31, Cancer:

Klenner, F.R.: Unpublished paper.

Schlegel, G.E. *et al*: The Role of Ascorbic Acid in the Prevention of Bladder Tumor Formation. *Trans Amer Ass Genitour Surg.*, 61: 1969.

Page 33-34, Cholesterol and Arteriosclerosis:

Ginter, E.L: Cholesterol and Vitamin C. *Amer J Clin Nutr.*, 24: 1238-1245, 1971.

Spittle, C.: Atherosclerosis and Vitamin C. *Lancet*, II: 1280-1281, 1971.

Ginter, E.: Effects of Dietary Cholesterol on Vitamin C Metabolism in aboratory animals. *Acta Med Acad Sci.* Hungary. 27:23-29, 1970.

Ginter, E., *et al*: The Effects of Ascorbic Acid on Cholesterolemia in Healthy Subjects with Seasonal Deficit of Vitamin C. *Nutr Metabol.*, 12: 76-86. 1970.

Willis, G.C.: An Experimental Study of the Intimal Ground Substance in Atherosclerosis. *Can Med Assoc J.*, 69: 17-22, 1953.

Shafer, J.: Ascorbic Acid and Atherosclerosis. *Amer J Clin Nutr.*, 23:27, 1970.

Stamler, J.: *Comprehensive Treatment of Essential Hypertensive Diseases*. Monograph on Hypertension, Merck, Sharp and Dohme.

Hecker, R.R. *et al*: *J Am Chem Soc.*, 75:2020, 1953.

Page 34, Corneal Ulcers:

Boyd, T.A. & Campbell, F.W.: *B Med J.*, 2:1145, Nov 1950.

Page 35, Glaucoma:

Virno, M.: *Eye, Ear, Nose and Throat Monthly*, 46:1502.

Page 35, 36 Pregnancies:

Greenblatt, R.B.: *Obst &Gun.*, 2:530, 1953.

King, C.C. *et al, New York Times*, Nov 2, 1952.

Page 36-39, Schizophrenia, Heat Stroke, Sunburn, Slipped Disc, Toxins and Heavy Metal Poisonings:

Klenner, F.R.: Significance of High Daily Intake, *op cit.*

Klenner, F.R.: The use of Vitamin C as an Antibiotic, *op cit.*

Mokranjac, M. and Petrovic, C.: Report on Mercury Studies in Guinea Pigs in Relation to Amounts of Vitamin C Administered. *CR Acad Sci.*, Paris.

Dannenburg, A.M. *et al*: Ascorbic acid in the treatment of chronic lead poisoning. *JAMA*, 114:1439-1440, 1940.

Pelletier, O.: Experiments with smokers and non-smokers. *JAMA*, April 1969.

Mayers, B.W.: Where there's smoke there may be carbon monoxide. *Med World News*, Jan 21, 1972.

Hoffer, J.: Use of Ascorbic Acid with Niacin in Schizophrenia. *Can Med J.*, Nov 6, 1971.

Hawkins, D.: Back to Reality the Megavitamin Way. *Med World News*, Sept 24, 1971.

Greenwood, J.: Optimum Vitamin C Intake as a Factor in the Preservation of Disc Integrity. *Med Ann DC*, 33:6, June 1964..

Massell, B.F. *et al*: Antirheumatic Activity of Ascorbic Acid in Large Doses. *New Eng J Med*, 1950.

Kyhos, E.D. *et al*: Large Doses of Ascorbic Acid in Treatment of Vitamin C Deficiencies. *Arch Int Med..*, 75:407, 1945.

Dalldorf, G.: *Vitamin C in Health and Disease*. W.B. Saunders, 1945.

Musser, J.H.: *Nutrition In The Aged*.W.B. Saunders Co., 1945.

Page 36, Burns:

Knisely, M.H. *et al*: *Arch Surg*, 51:220, 1945

Knisely, M.H.: *Science*, 106:431, 1947.

Berkeley, W.T., Jr.: *So Med J.*, 58:1182-1184.

Lund & Levenson: *Arch Surg.*, 55:557, 1947.

Bergman, H.C. et al: *Am Hrt J.*, 29:506-512, 1945.

Lam, C.R.: *Col Rev Surg Gyn & Obst.*, 72:390-400, 1941.

Klasson, D.H.: *NY J Med.*, 51:2388-2392, Oct, 1951.

Page 37, Surgery, Shock:

Chambers, R. & Pollock, J.: *J Gen Physiol.*, 10:739, 1927.

Clark & Rassiter: *Q J Exp Physiol.*, 32:279, 1944.

Barlett, M.K. *et al*: *NEJM.*, 226:474, 1942.

Lanman, T.H. & Ingalls, T.H.: *Am Surg.*, 105:616, 1937.

Schumacher: *Ohio State Med J.*, 42:1248, 1946.

Page 41-42, Poisonous Insects and Reptiles:

Klenner, F.R.: *Hunting and Fishing Magazine*, April, 1950.

Pages 43-54, Myasthenia Gravis and Multiple Sclerosis:

Klenner, F.R.: Response of Peripheral and Central Nerve Pathology to Megadoses of the Vitamin B Complex and other Metabolites. *J Appl Nutrit.*, 25:#304, 1973.

Klenner, F.R.: Multiple Sclerosis Diagnosis and Treatment Suggestions. Original paper, unpublished.

Klenner, F.R.: Fatigue—Normal and Pathological with Special Consideration of Myasthenia Gravis and Multiple Sclerosis. *So Med & Surg.*, 111:#9, Sept 1949.

Page 45:

Stern, E. I.: The Intraspinal Injection of Vitamin B_1 for the Relief of Intractable Pain, and for Inflammatory and Degenerative Diseases of the Central Nervous System. *Am J Surg.*, 34:495, 1938.

Rosenberg, L.E.: Vitamin Deficiency Diseases and the Vitamin Dependent Diseases with Reference to B and D., *National Health Federation Bulletin* Vol XVIII. #10, Nov 1972.

Moore, M.T.: Treatment of Multiple Sclerosis with Nicotinic Acid and Vitamin B_1. *Arch Int Med.*, 65:18, Jan 1940.

Other supportive articles from the medical literature:

Kempe, C.H.: A Key to the Secret of M.S., *Med World News*, July 7, 1972.

Schandl, D.K.: Dissertation on Environmental and Pyridoxine cause of M.S., *The Charlotte Observer*, Charlotte, N.C., April 23, 1973.

Brickner, R.M.: A Critique of Therapy in M.S., *Bull Nue Inst NY.*, 4:665, April 19367.

Zimmerman, H.H. and Burack, E.: Lesions of the Nervous System Resulting from a Deficiency of the Vitamin B complex. *Arch Path.*, 13:207, Feb 1932.

Spies, T.D. *et al*: The Use of Nicotinic Acid in the Treatment of Pellagra. *JAMA*, 110:622, Feb 1938.

Spies, T.D. and Aring, C.D.: The Effect of Vitamin B_1 on the Peripheral Neuritis of Pellagra, *JAMA*, 110:1081, April, 1938.

Page 55, Toxic Doses:

Patterson, J.W.: *J Biol Chem.*, 81-88, 1950.

Lambden, M.P. *et al*: *Proc Soc Exp Biol Med.*, 85:190-192, 1954.

Need for Vitamin C:

Sabin: *J Exp Med.*, 89:507-515, 1939.

Wright: *Ann Int Med.*, 12, 4:516-528, Oct 1938.

Brody, H.D.: *J Am Diet Ass.*, 29:588, 1953.

Regnier, E.: *Rev of Allergy*, 22:948, Oct 1968.

Clinical Guide to the Use of Vitamin C

This work summarizes the specific medical applications for vitamin C by one of the pioneering champions of this essential vitamin.

Frederick Klenner, M.D., a 1936 graduate of Duke University School of Medicine, began to utilize "magadoses" of vitamin C in his patients for a wide range of conditions and diseases in an effort to find safe non-toxic methods of promoting recovery. By the end of his distinguished career in medicine in the late 1970's, Dr. Klenner had painstakingly recorded his experiences with vitamin C in his patients. This legacy is found in nearly 30 published papers and scores of reports found in his office at the time of his death.

Beginning in the early 1980's pediatrician Lendon Smith, M.D., decided to undertake the task of summarizing and annotating key published and unpublished reports of Dr. Klenner. In doing so, Dr. Smith has made available to patients and practitioners a reference source for the application of Vitamin C that spanned over thirty years of medical practice.

Although the RDA for Vitamin C remains between in the range of 50 to 60 mg. world-wide, Dr. Klenner knew that this minimal level was inadequate to maintain optimal health in humans. A 15 year study of 13,500 subjects by the University of Alabama School of Medicine found that those people who had the least number of clinical symptoms and signs in any age group, were those consuming an average of 410 mg of vitamin C a day; a level well above the RDA. It is noteworthy therefore that in a recent report in the *New England Journal of Medicine*, our ancestors, virtually free of today's common degenerative diseases, consumed an average of 392 mg of vitamin C a day. Also, epidemiological evidence of a protective effect of vitamin C for non-hormone-dependent cancers is now very strong, according to a 1991 National Cancer Institute analysis published in the *American Journal of Clinical Nutrition*.

Recent doubts of the medicinal and preventive value of vitamin C is finally losing ground to the discovery that practitioners like Dr. Klenner may have been years ahead of others in understanding the powerful therapeutic benefits of this important vitamin. **Clinical Guide to the Use of Vitamin C** is a testimonial to the vision of just such a medical pioneer.

ISBN 0-943685-13-3 $4.95